

November 1951

2½ Monthly

BUSINESS

The Journal of Management in Industry



Having trouble with

ELECTRIC CLOCKS?"



can help you

Hadley Sound Equipments Ltd. is a leading manufacturer of high quality sound equipment. Our products are used by the world's leading broadcasters, recording studios, and live performance venues. We have a reputation for reliability and innovation, and our products are known for their exceptional sound quality and durability.

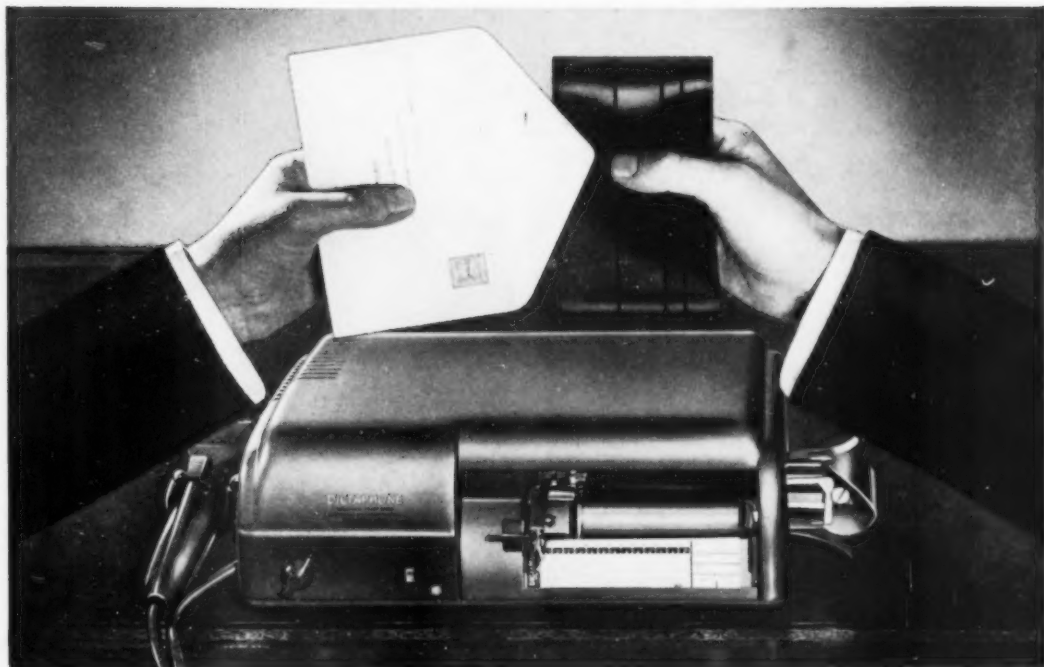
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25,000 spoken words in an envelope!



Perfectly recorded on Memobelts by the Dictaphone TIME-MASTER

TEN MEMOBELTS go into an ordinary envelope . . . fifteen minutes of dictation go on to each Memobelt . . . *you can mail over 25,000 words for a 2½d. stamp!* For Dictaphone Time-Master dictation on Memobelts is the most compact, as well as the clearest and simplest method of office dictation.

CRYSTAL-CLEAR RECORDING

These little plastic belts slip into the machine in a second. They make a clear, permanent record of your dictation, 15 full minutes of crystal-clear recording without any fuss or intricate adjustments. Memobelts need no "kid-glove" handling either—light and pliable, they can be folded flat for filing or mailing.

LOOK WHAT THE

DICTAPHONE TIME-MASTER OFFERS!

1. Streamlined machine, only 4½ ins. high, slightly larger than a letterhead. 2. Uniformly clear recording and reproduction. 3. Uniform backspacing, immediate place finding. 4. Simple automatic operation. 5. Mailable, filable, expendable Memobelts, low-cost plastic medium. 6. Nation-wide service, Dictaphone dependability.

DICTAPHONE

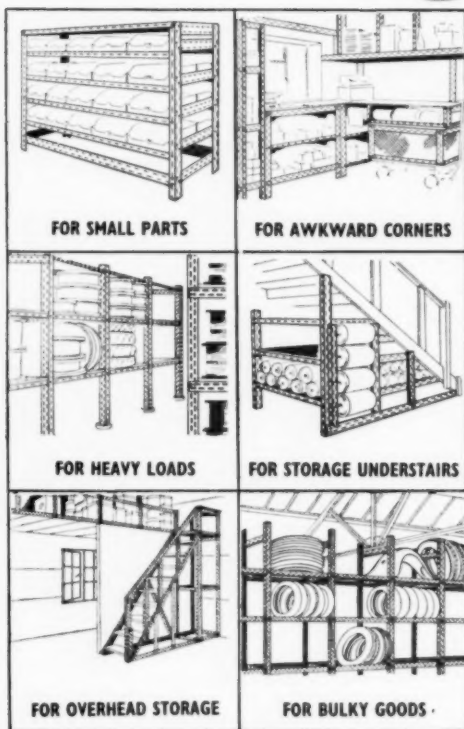
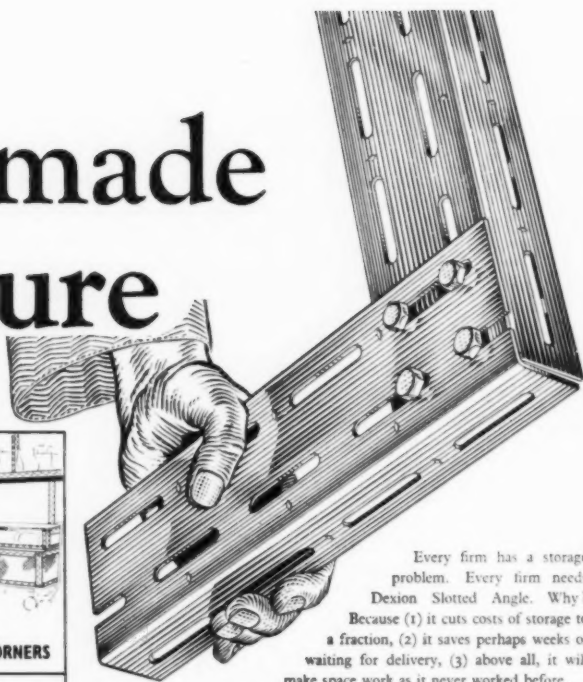
Regd. Trade Mark

GREATEST NAME IN DICTATION

Write for Time-Master literature to Dictaphone Co. Ltd. Dept. Q, 107, Kingsway, London, W.C.2.

MADE IN GREAT BRITAIN. Branch Offices: BELFAST BIRMINGHAM BRISTOL CORK DUBLIN GLASGOW LEEDS LIVERPOOL MANCHESTER NEWCASTLE

storage made to measure



FOR SMALL PARTS

FOR AWKWARD CORNERS

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Every firm has a storage problem. Every firm needs Dexion Slotted Angle. Why?

Because (1) it cuts costs of storage to a fraction, (2) it saves perhaps weeks of waiting for delivery, (3) above all, it will make space work as it never worked before.

With Dexion you can build your own storage racks for loads light or heavy—to any size, to any shape, to the exact design to suit your needs. In this way you will get the utmost use out of every inch of room, eliminate every idle corner. You can remodel your storage at any time to suit changes in types of articles to be stored. Do you want extra floor-space? Take your storage off the floor and put it above, on your walls, under your roof. You pay for ALL your space—and space is expensive—use it to the full in all the three dimensions. You can do it so easily with Dexion—one simple constructional unit, you have only to cut to length and bolt together.

Follow the example of firms like G.E.C., Vickers-Armstrong, Tate & Lyle and thousands of others—always keep a stock of Dexion handy. Not only for storage equipment but for the dozens of other ways Dexion can save you time, space, money—may we tell you about them?

DEXION

SLOTTED ANGLE

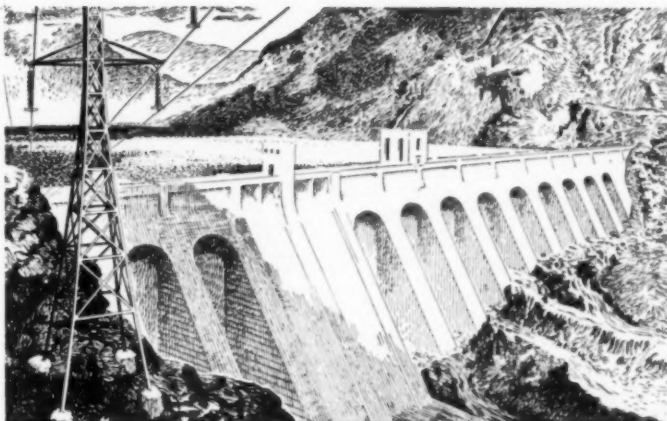
Write or 'phone for illustrated folder A.10. Better still, come and see an actual installation (no appointment necessary) at:—34, Fouberts Place, W.1 (near Liberty's).

DEXION LTD., Triumph House, 189 REGENT ST., LONDON, W.1. 'phone: REGent 4841-5 'grams: Dexion, Piccy, London.

Dexion Angle is protected by Brit. No. 620, 696 and world patents

'ENGLISH ELECTRIC'

Every year what was once a shallow mountain loch now produces 130 million units of electricity, bringing better living to the people of Scotland. Loch Sloy is the most ambitious hydro-electric project yet completed in Great Britain. All the turbines and electrical equipment were supplied by 'ENGLISH ELECTRIC'.



bringing you

The ENGLISH ELECTRIC Company is the only firm in Britain supplying complete plant for hydro-electric installations. This equipment provides light, heat and power for homes and industries all over the world.

'ENGLISH ELECTRIC' puts the power of electricity at the service of millions.



better living

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She has her work cut out...

Lucky girl! Her job is lettering, and with UNO-stencils her work is *cut out for her*. She simply fills in the blanks, and produces crisp clean lettering at great speed.

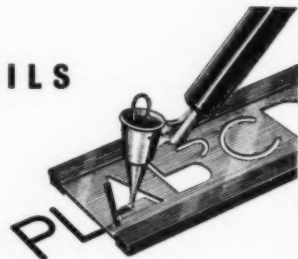
UNO pen stencils, made from transparent plastic, give a professional touch to your lettering first time and every time. Using UNO waterproof

inks, you can produce perfect and permanent results on maps, plans, drawings, showcards, price tickets and signs, etc., etc. There are many styles of lettering available, and special stencils and corner plates can be made to order.

Complete sets from 17/6, obtainable from most good Stationers, or direct.

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cut out for the job



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THE **Ediphone** FOR THOSE WHO PREFER THE
Cylinder Type

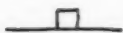


THOMAS A. EDISON LTD.
VICTORIA HOUSE
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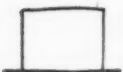
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Your product may be —

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or large



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- SELF-ADHESIVE SEALING TAPES for—security—protection and airtight sealing.
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Foremost
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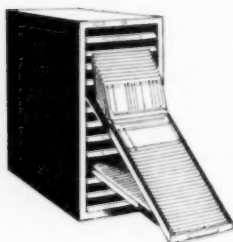
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Record Sales . . .

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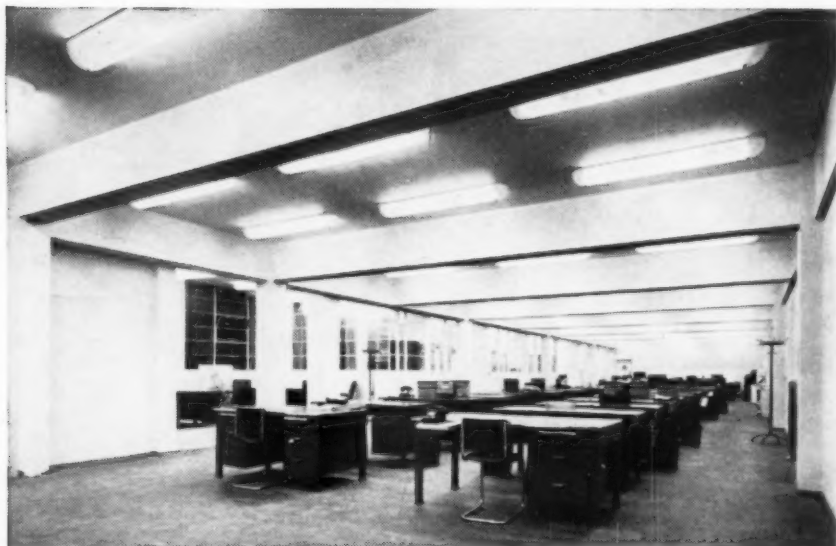
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**it meets every
lighting need**



SO UP-TO-DATE



**it aids
efficiency**

The efficiency of Osram fluorescent lighting such as this can be most effectively adapted to every lighting need. Its bright attractiveness welcomes the visitor in public rooms, its clear modern light aids the staff in every department.

G.E.C. illuminating engineers will gladly check your existing lighting. Expert advice is freely available for new installations.

If you already have fluorescent lighting, your old lamps may not be giving full value for current consumed. Replace them with OSRAM fluorescent lamps.

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FLUORESCENT LIGHTING with G.E.C. fittings

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

*"In the Accounts Section
we now have
no problem of
Invoice calculation
and typing..."*



HERE is what a very large business undertaking has to say on the admirable way the Powers-Samas

punched card system tackles Sales, Purchases and Stock Records :—

"In the Accounts Section we now have no problem of Invoice calculation and typing and, since everything is pre-determined, practically no manual punching. The speed of the Tabulator easily takes care of the peak periods. Invoices can now at all times be despatched on the same day as the goods, and we are always certain of their accuracy."

The Powers-Samas punched card system is employed in many fields of industry, commerce and public service. No matter how intricate the analysis demanded or how complicated the costing, the Powers-Samas system takes them in its stride — speedily, accurately and with the utmost economy in labour. Let us send you further details.

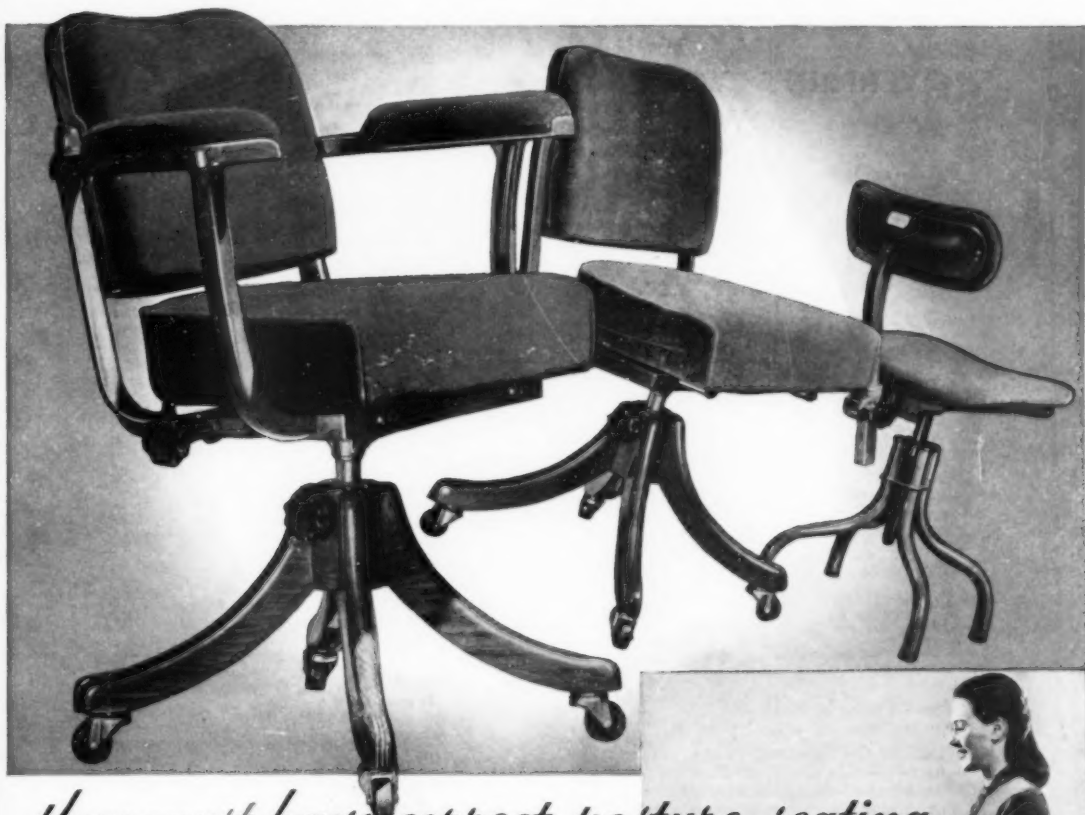


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POWERS-SAMAS ACCOUNTING MACHINES (SALES) LIMITED

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For comfort and efficiency. . . .



they must have correct posture seating

There is a suitable Tan-Sad Chair for everyone in your firm, from director to typist, offering maximum comfort and encouraging a correct sitting position. Everyone does better work in a Tan-Sad.

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NOVEMBER, 1951

11

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OVERPRINT YOUR

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End—Writing by Hand—
Rubber Stamping—Printing Delays.

Consider the large savings that can be effected by 'On the Spot' Overprinting by using the Dapag Machine. Any boy or girl in your factory can overprint all the details on to any quantity of your labels, tickets, tags, etc., within a matter of seconds. Thanks to the Dapag Quick Setting Type Method, the smallest quantities are produced as economically as the largest. Send for further details today. Sales and Service available in all areas of the British Isles.

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Telephone : CItY 5373/4.



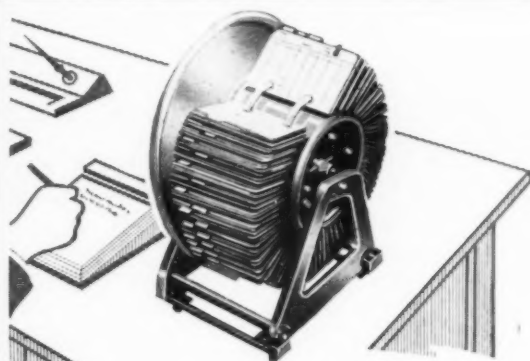
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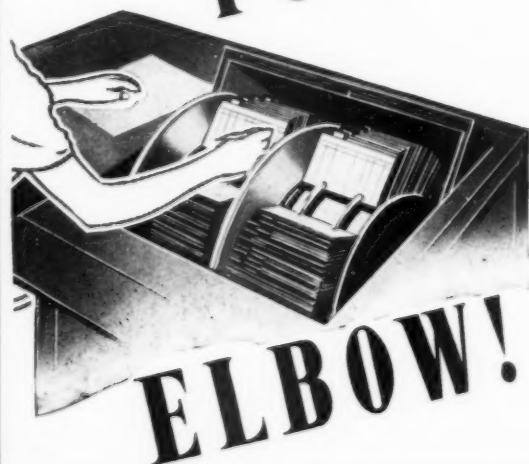
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YOUR



ELBOW!

**THE SPEEDIEST —
EASIEST — AND MOST
EFFICIENT OF ALL
REFERENCE AND
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RECORD CONTROL

"CARDWHEEL" is the speediest, easiest —and most efficient of all Reference and Recording Systems!

"CARDWHEELS" are compact, complete and flexible—cards can be quickly inserted or removed without disturbing the proper sequence of the remaining cards.

"CARDWHEELS" can be used for ANY card index application where speed of reference and posting is required. Entries can be posted DIRECT on to both sides of the card WITHOUT REMOVAL.

"CARDWHEEL" Models are available for card sizes 4" x 2", 5" x 2", 5" x 3", 6" x 4" and 8" x 5". Your existing cards can be transferred to "CARDWHEEL" without any expensive changeover.

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'CARDWHEEL'

ROTARY INDEX

C. W. Cave Co. Ltd

59, HOLBORN VIADUCT, E.C.1.

Telephone: CENTral 3778/9.

**"He looked
like thunder—**



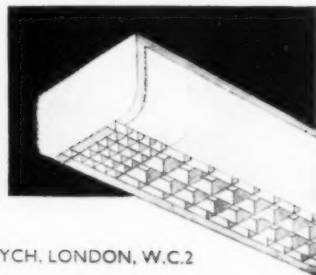
—so I said to him, 'Mr. Tomkins, you can't expect faultless typing in this light'. Then he sat down in my chair and squinted at my work and said, 'I can see all right', and stamped back into his office. But he's an old dear really because: when I went into his office half an hour later, there he was ringing up Crompton Parkinson about new lighting for the whole office. Now I must get on because I've a reputation to keep up. He hasn't spotted a mistake in three weeks."

For shop, office, showroom or factory Crompton Fittings are the latest answer to every lighting problem. It costs you nothing to call in a Crompton Lighting Service engineer.



BY APPOINTMENT
MANUFACTURERS
OF ELECTRIC LAMPS
TO H.M. THE KING

Switch to
Crompton



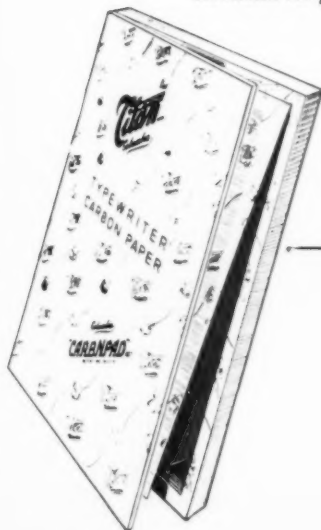
CROMPTON PARKINSON LTD., CROMPTON HOUSE, ALDWYCH, LONDON, W.C.2

Telephone : CHAncery 3333

Telegrams : Cromptark, Estrand, London

Who has the last word on carbon paper . . . *and why..?*

How did the make of carbon paper used in your organisation come to be chosen . . . who orders it now? Investigations show that in many cases executives do not know the answers to these questions. Development and research by the Columbia organisation are such that you cannot be sure you are using the best until you have tested Columbia "Titan" the carbon paper that satisfies all the eleven proven essentials for perfect carbon copies. Make a comparative test NOW . . . your time will be amply repaid.



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BRITISH MADE

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MANUFACTURING CO. LTD.**

Head Office:

Kangley Bridge Rd., Lower Sydenham, London, S.E.26.

Phone: Sydenham 5193-6.



Tough, strong Kraft Linerboard, from which corrugated cases like these are made, is manufactured at Bowaters mills in Kent. Within their organisation, therefore, Bowaters are able to manufacture both the raw material and the finished product.



BOWATERS

FIBRE CONTAINERS LTD

Purley Way • Croydon • Surrey

CROYDON 5164

Issued by ASSOCIATED BOWATERS INDUSTRIES, LIMITED, a member of the Bowater Organisation.

Your Watchman is Useless . . .



unless he does the following **four essential things**:

1. Makes patrols at **frequent** intervals.
2. Makes **complete** patrols covering the whole of your premises.
3. Makes these patrols **slowly** and **thoroughly**.
4. Makes them **at different times** each night.

Unless you install a Control System specially designed to ensure that these four essential things really are done you can be quite certain they will not be done.

The BLICK Watchman's Control System was designed after full discussion with Scotland Yard, Insurance experts and practical men who have been controlling Watchmen for years.

It is used by the Ministry of Works, Shell Petroleum Ltd., Ford Motor Co. Ltd., I.C.I. Ltd. and many other household names.

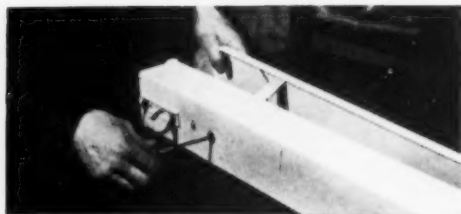
IF you employ a Watchman write to-day for full particulars of this system explaining what it does and why it does it.

BLICK TIME RECORDERS LTD.

2 BLICK HOUSE, 188/190 GRAY'S INN ROAD, LONDON, W.C.1.

TERminus 2722

Choose fittings that are—



REMOVING THE CHANNEL



MARKING THE CEILING



RE-FIXING THE CHANNEL



ATTACHING THE REFLECTOR

Easily stocked

Reflectors nest within each other.

Easily erected

In five simple stages.

Easily maintained

Reflectors readily detached

This entirely new range of Metrovick fluorescent fittings is based on a standard channel with interchangeable reflectors.

Different styles of reflectors are readily attached to the channel and for stocking and transport they can be nested together and easily stacked.

No live parts are exposed when the reflectors or enclosures are removed for cleaning.

All the fittings are constructed of sheet steel, bonderised and stove enamelled. They are complete with lampholders and wiring and unless it is stated otherwise they are supplied complete with auxiliary gear either for switch start or instant start as required.



LAMP, STARTER SWITCH IN POSITION

METROVICK

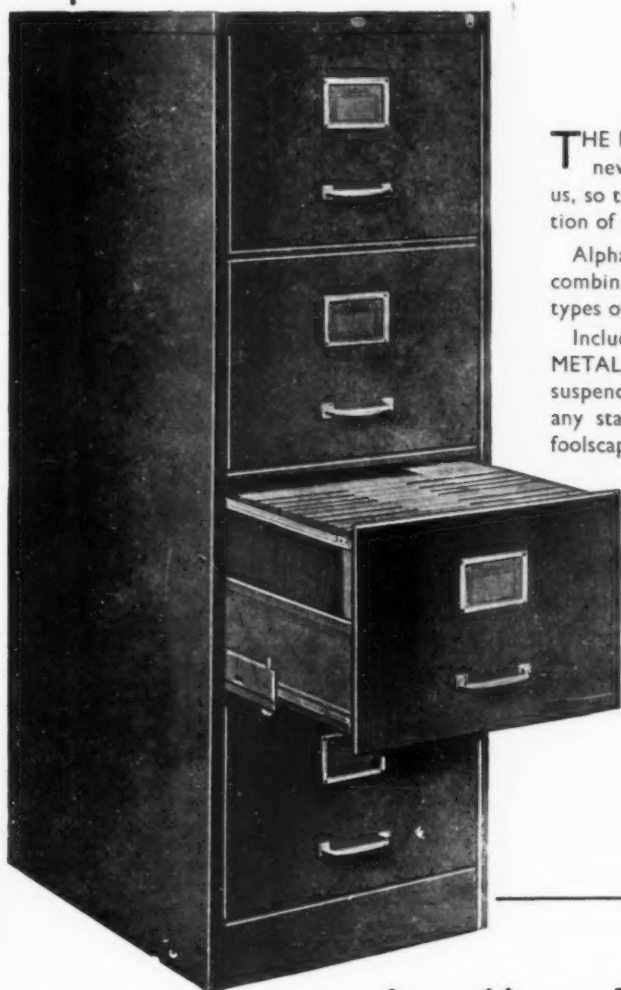
Send for leaflet 4121/21-2

METROPOLITAN-VICKERS ELECTRICAL COMPANY LTD., ST. PAUL'S CORNER,
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Member of the A.E.I. group of companies

S/F 104

Preparing for 1952



THE NEW YEAR is a good time to institute a new filing system. 1952 will soon be upon us, so this is the month to consider the installation of a new filing system.

Alphabetical and numerical systems (or a combination of both), geographical, subject—all types of systems can be provided.

Included in the Art Metal range is ART METAL-C.V.S.—the most modern type of visible suspended filing system. It may be installed in any standard vertical filing cabinet, quarto or foolscap, and is adaptable to your present method of filing. It promotes tidiness and efficiency in filing, is capable of expansion and saves a considerable amount of time.

Either we or our local agents will be very pleased to advise upon your filing problems, entirely without obligation. May we help you?

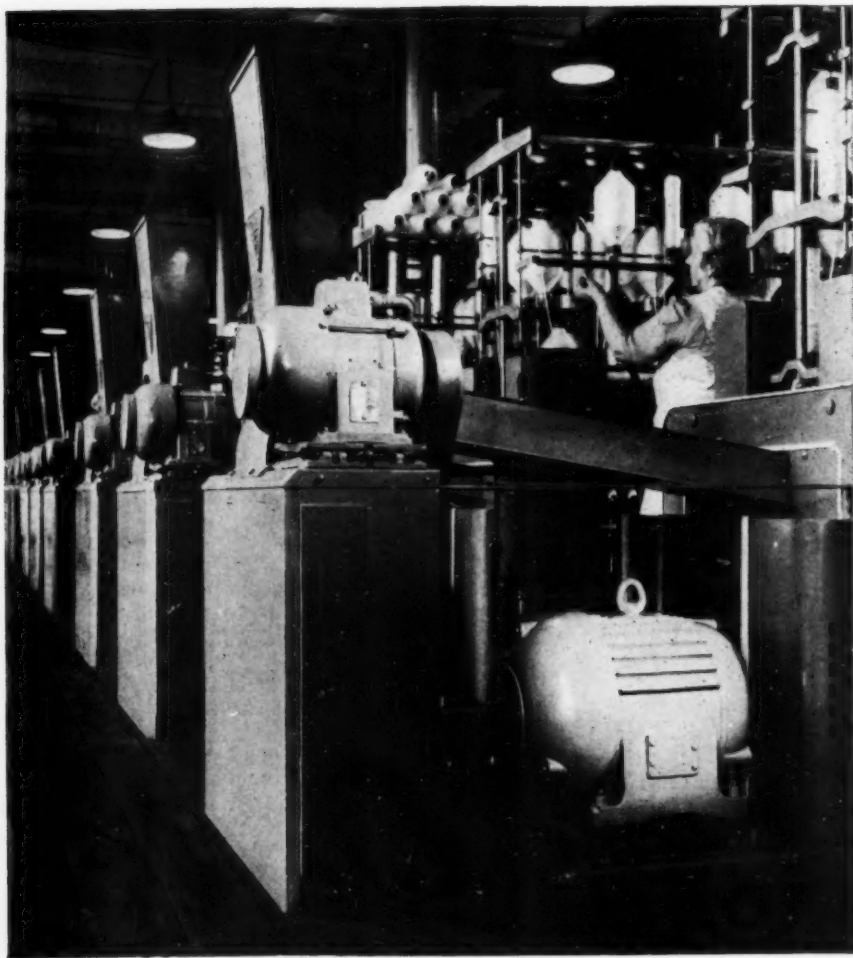
★ CATALOGUE NO. 601
gladly sent on request

Illustration shows Art Metal Filing Cabinet equipped with the C.V.S. suspended filing system.

Art Metal CONSTRUCTION CO.

Offices and Factory: 201, Buckingham Palace Road, London, S.W.1

Telephone: SLOane 5201 (6 lines).



Individual electric drive at the Lily Mill, Shaw, Oldham—a part of the CYRIL LORD organisation

How to get the most out of your motive power

WITH ELECTRICITY you can take the power to the machine. Individual electric drive gives complete freedom for re-spacing of machinery to suit changing requirements and to give *maximum production capacity from a minimum power load*. Working conditions are improved by the absence of belts and shafting. Machines are driven at their optimum speeds and push buttons give complete control.

WHERE TO GET MORE INFORMATION
Your Electricity Board will be glad to help you to get the utmost value from the available power supply. They can advise you on ways to increase production by using Electricity to greater advantage — on methods which may save time and money, materials and coal, and help to reduce load shedding. Ask your Electricity Board for advice: it is at your disposal at any time.

Electricity for **PRODUCTIVITY**

Issued by the British Electrical Development Association



Start the job right . . .

WHEN you are planning for the future, the decisions which seem good today must be good several years hence. This is particularly true when new office methods are being considered.

Isn't it wise at such a time, therefore, to summon the resources of an organisation specialising in such problems? Thousands of firms take this step—and get valuable help from their Kalamazoo representative. He is constantly meeting similar problems to your own. Calling him in to help you decide the best way to solve them, is surely a good way to start the job.

Every firm choosing Kalamazoo for its office automatically enlists a free installation service. Not only do you start right, but Kalamazoo Service Demonstrators ensure that the new method is completely understood by your staff, and fits smoothly into office routine. The job is kept right.

. . . and keep it right



Kalamazoo Ltd., NORTHFIELD, BIRMINGHAM, 31

TAYLORS *for all makes of* TYPEWRITERS

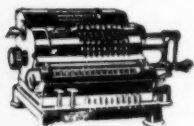
★ Adding Machines, Duplicators, Cash Registers, Calculators, Time Recorders, and All Business Appliances **BOUGHT, EXCHANGED, HIRED AND REPAIRED**

Save Time—HIRE an Adder for Stocktaking

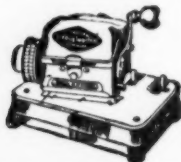
ADDOGRAPH the simplest portable adding and listing machine—delightful to use, eight col. to add from $\frac{1}{4}$ d. to £9,999 19s. 11 $\frac{3}{4}$ d. Nine col. to add from $\frac{1}{4}$ d. to £99,999 19s. 11 $\frac{3}{4}$ d. Hand and electric models with or without subtraction and wide paper carriages. No modern office can afford to be without one.



THE TAPPIT ALL-RUBBER DAMPER. Ever Ready and Hygienic. A squeeze controls feed of moisture. 2/- post free.

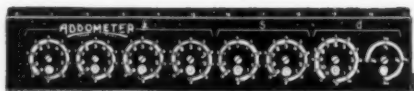


ROTARY CALCULATORS ALL MAKES. For all calculations. Multiply, divide, add and subtract in 1/10th time taken to do so mentally.



ELIMINATE LOSS AND FRAUD BY USING A "SAFEGUARD," THE BEST CHEQUE PROTECTOR. Used by leading banks and firms. Do you realise that an altered cheque is your own liability? Price £16 10s. All makes of Cheque Writers at bargain Prices.

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Rapid Automatic Addition and Subtraction. Rests flat on the books. For Decimal or Ordinary Figures and Feet and Inches etc. **FOR POCKET OR DESK.** So simple anyone can use it. In plush-lined duroid case. Size: 11 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x $\frac{1}{2}$ ".

When ordering state for what purpose required.

All models price Six guineas

★ WANTED URGENTLY

HIGHEST PRICES PAID for all Makes of Modern Office Machinery: Adders, Calculators, Cashiers, Addressers, Duplicators, Typewriters, Steel Safes, and Steel or Wood Office Furniture

★ IN STOCK

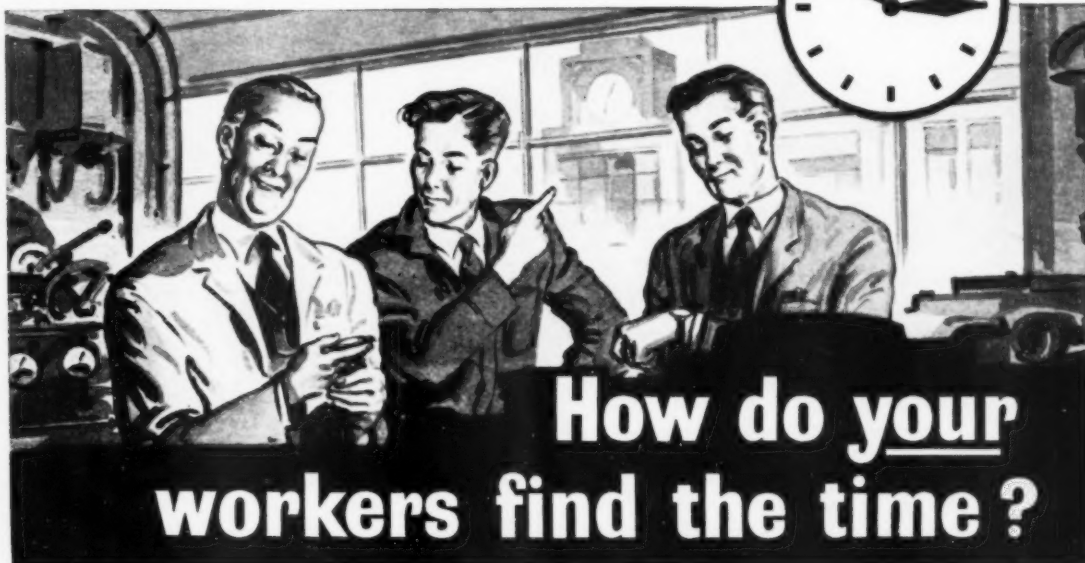
A few Visible Index Systems for sale. Safes, Desks, Chairs and Tables.

TAYLORS TYPEWRITER MARKET

Write, Call or 'Phone **HOLborn 3793**

74 CHANCERY LANE (Holborn End) LONDON W.C.2 and at Maidenhead

WHEN IT'S A QUESTION OF TIME . . .



How do your workers find the time?

Do your employees confer anxiously as break and finishing times approach, taking time off to find out the time?

Time searching costs industry far more than it should, especially as workers are apt to believe the fastest clock when it is a question of finishing the day's work.

T.R. Time Control puts an end to this and many other kinds of time loss in industry. The showing, sounding and recording of the correct time all the time is only a small part of what T.R. Time Control can do to make the time you pay for more productive.

Time Recorders, Internal Telephones, Internal Broadcasting, installed and maintained under guarantee by Telephone Rentals Ltd. — that's T.R. Service.

Spend a profitable moment now to write for full particulars.



SERVICE

speeds production

TIME CONTROL for making
man-hours more productive.

INTERNAL TELEPHONES
for speedy speech contact.

INTERNAL BROADCASTING
for staff location, time signals,
works relations, announcements
and music.

WRITE TO INF. B5 KENT HOUSE, RUTLAND GARDENS, LONDON, S.W.7, OR YOUR NEAREST BRANCH —
14 THROUGHOUT THE UNITED KINGDOM. ALSO JOHANNESBURG, CAPE TOWN, PARIS AND BRUSSELS

Put this Unique New Aid to Personal Efficiency On All Your Managers' Desks



A few of the things it does for You

- TAKES care of minor details.
- REMINDS you of all engagements and appointments.
- ENABLES you to plan your work for each day of the week.
- ENSURES that nothing is overlooked.
- KEEPS a permanent record of past happenings.

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In the Enquire-Within section you get : Abbreviations in frequent use; Important Dates; Statistics of U.K. Population, Age and Manpower Distribution; interest tables and other useful facts and data.

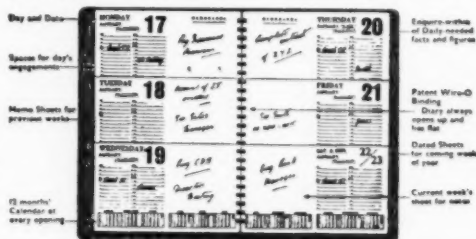
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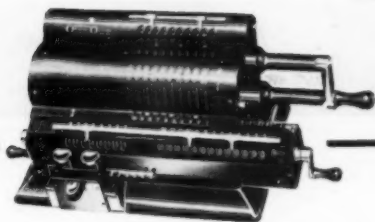
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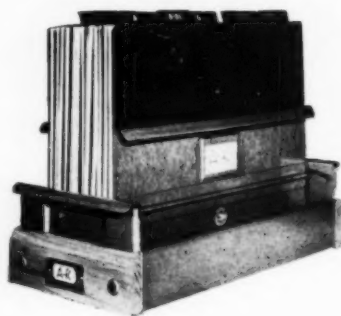
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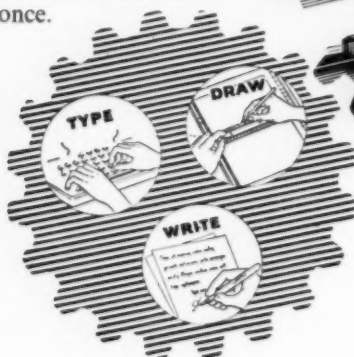
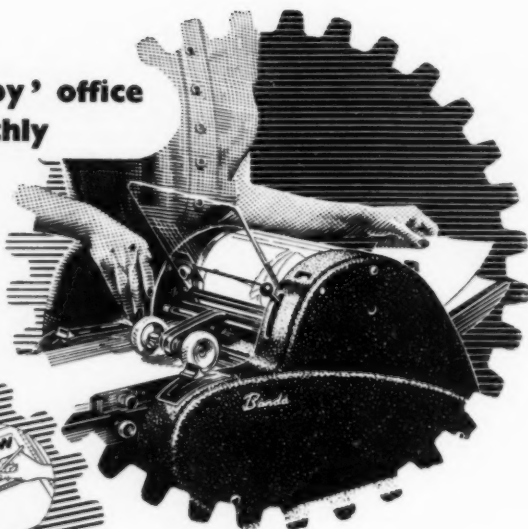
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ACCOUNT BOOKS
Copeland-Chatterton Co., Ltd. ... 8
Jones, Percy (Twinlock) 68

ACCOUNTING MACHINES
Burroughs Adding Machine 32
National Cash Register 25
Powers-Samas, Ltd. ... 7
Remington-Rand, Ltd. ... 7
Underwood Elliott Fisher 40

ACCOUNTING SYSTEMS
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Roneo, Ltd. ... 59
Shannon, Ltd. ... 64

ADDING MACHINES
Block & Anderson, Ltd. ... 28
Bulmer's (Calculators), Ltd. 32
Burroughs Adding Machine 32
National Cash Register 25
Office Machinery, Ltd. ... 76
Sumlock, Ltd. ... 75

ADDRESSING MACHINES
Addressall Machines Co. 77
Adrema, Ltd. ... 26
The Hayward Co., Ltd. ... 59
Roneo, Ltd. ... 59

ADDRESSING MACHINE ATTACHMENT
Fanfold, Ltd. ... 36
Smith, W. H. & Son, Ltd. 36

AIR TRANSPORT
Aer Lingus ... 105
B.O.A.C. ... 105
Pan American Airways, Ltd. ... 105

ASSURANCE
General Accident Fire & Life Assurance Corp. Ltd. 108
Prudential Assurance Co. ... 108

BANKS
Midland Bank Ltd. ... 91
BATTERIES (Heavy Duty)
Nife Batteries Ltd. ... 91

BLINDS
Avery, J. & Co., ... 111

BOOKS & PUBLICATIONS
Pitman, Sir Isaac & Sons Ltd. ... 31
Psychology Publishing Co. ... 31

BROADCAST MUSIC
Central Rediffusion Services, Ltd. ... 63
Dictograph Telephones ... 63
Philips Electrical Ltd. ... 23
Telephone Rentals, Ltd. ... 23

BUSINESS EQUIPMENT & ACCESSORIES
Alpa Plastic Arts, Ltd. ... 26
Black Office Equipment 113
Block & Anderson, Ltd. ... 28
Combs, H. A., Ltd. ... 115
Copeland-Chatterton Co. 8
Jones, Samuel Co. ... 6
Roneo, Ltd. ... 59
Shannon, Ltd. ... 64
Standard Office Supplies Co. ... 108

CALCULATING MACHINES
Block & Anderson, Ltd. ... 28
British Olivetti Ltd. ... 27
Bulmer's (Calculators), Ltd. 32
Burroughs Adding Machine 32
Sumlock, Ltd. ... 75
Wood, Gilbert, Ltd. ... 25

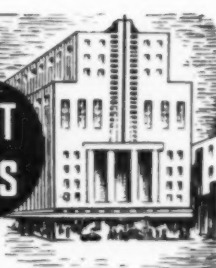
CANTEEN EQUIPMENT
Bartlett, G. F. E. Ltd. ... 102
Catering & Industrial Furniture Ltd. ... 102
Dawson Brothers, Ltd. ... 102
Farquharson, J. & Sons ... 102

CASTINGS
Renfrew Foundries, Ltd. 34

CLOCKS, WATCHMEN'S
Blick Time Recorders ... 17

COIN COUNTING MACHINES
International Coin Counting Machines Co. Ltd. ... 59
Shannon Ltd. ... 64

YOUR GUIDE TO BUSINESS EQUIPMENT SERVICES & SUPPLIES IN THIS ISSUE...



COLLEGES & COURSES

Conversation Studies ... 36
Linguaphone Institute ... 36
Speaker's Club ... 36
Jones, G. F. (Senogism) ... 36

CONTINUOUS STATIONERY
Carter-Davis Ltd. ... 36
Copeland-Chatterton Co. 8
Egry Ltd. ... 36
Fanfold Ltd. ... 36
Lamson Paragon Co. ... 95
Smith, W. H. & Son Ltd. 36

COUNTING & NUMBERING MACHINES
English Numbering Machine ... 108

CYCLE PARKS
Abix Ltd. ... 108
Constructors Ltd. ... 108
Odoni, Alfred, A. & Co. ... 112

DICTATING & RECORDING EQUIPMENT
Dictaphone Co. Ltd. ... 61
E.M.I. Ltd. ... 61
Ediphone Voice Writing ... 115
Harcraft, H. & L. Ltd. ... 115
London Office Machines Ltd. ... 76
Office Machinery Ltd. ... 76
Thermionic Products ... 74
Trevor-Johnstone Co. ... 74

DRAWING OFFICE EQUIPMENT
Haycraft, H. & L. Ltd. ... 115
West, A. & Partners ... 4

DUPICATING MACHINES
Block & Anderson Ltd. ... 28
Bulmers (Calculators) ... 70
Eilams Duplicator Co. ... 69
Gesstetner, D. Ltd. ... 69
Kaye's Rotaprint Ltd. ... 73
Office Machinery Ltd. ... 76
Roneo Ltd. ... 59

ELECTRIC CLOCKS
Dictograph Telephones ... 63
Gent & Co. Ltd. ... 63
International Time Recording Co. Ltd. ... 67
Magna Time Co. ... 93
Smith's English Clocks ... 23
Telephone Rentals, Ltd. ... 23

ELECTRICAL PLANT
Crompton-Parkinson ... 14
Philips Electrical Ltd. ... 96

ENGRAVERS AND BLOCKMAKERS
Gee & Watson ... 93

FACTORY EQUIPMENT AND ACCESSORIES
Constructors, Ltd. ... 30
Sieber, James Equipment 93

FILING SYSTEMS
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Economy Filing Co. Ltd. ... 115
Expandex Visible Filing ... 68
Jones, Percy Ltd. ... 68
Kalamazoo Ltd. ... 21
Remington-Rand Ltd. ... 59
Roneo Ltd. ... 59
Shannon Ltd. ... 64

FILM PROJECTORS
Cinex Ltd. ... 104
Heaton, Wallace Ltd. ... 98
Freder Brothers ... 101
Harcraft Ltd. ... 101
Hunt & Collets Ltd. ... 100
Hygiene Products Ltd. ... 38
Lambart & Smyth Ltd. ... 101
Peter's Automatic Machines ... 101
Sanguard Appliances ... 89
Smith & Wellstood Ltd. ... 89
Spiral Tube Ltd. ... 106

FIRE PROTECTION
Nu-Swift Ltd. ... 116

FLOORING
Great Met. Flooring Co. 96
Perring, John Ltd. ... 116
Rubbafors Co., Ltd. ... 116

HEALTH SERVICES
Cresco Ltd. ... 95
Cuxson Gerrard & Co. ... 104
Deosan Ltd. ... 98
Freder Brothers ... 101
Harcraft Ltd. ... 101
Hunt & Collets Ltd. ... 100
Hygiene Products Ltd. ... 38
Lambart & Smyth Ltd. ... 101
Peter's Automatic Machines ... 101
Sanguard Appliances ... 89
Smith & Wellstood Ltd. ... 89
Spiral Tube Ltd. ... 106

HOTELS
Branksome Tower Hotel 110

INDUSTRIAL CLEANING
B.V.C. Engineering Co. ... 111
Dixon, R. G. & Co. Ltd. ... 88
Lamson Engineering Co. ... 88
Infra-red Drying ... 80
De la Rue, Thos. Ltd. ... 80
Letter Opening Machines ... 90
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LUBRICANTS
Price's Lubricants Ltd. ... 85
Shell Mex & B.P. Ltd. ... 87

MECHANICAL HANDLING
Lamson Engineering Co. ... 88
Lansing Bagnall Ltd. ... 88
Power Jacks Ltd. ... 86
Rubery Owen Ltd. ... 86
T. & T. Works Ltd. ... 109
Wingrove & Rogers Ltd. 84
Microfilm Cameras ... 71
Edison Swan Electric Co. 71
Kodak Ltd. ... 71
Motors (Re-conditioned) ... 19
Morris Commercial Cars ... 94
Noise Prevention ... 94
Burgess Products, Ltd. ... 94
Office Furniture (Steel) ... 19
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Bawn, W. B. & Co. Ltd. ... 116

FILM PROJECTORS

Cinex Ltd. ... 104
Heaton, Wallace Ltd. ... 98
Freder Brothers ... 101
Harcraft Ltd. ... 101
Hunt & Collets Ltd. ... 100
Hygiene Products Ltd. ... 38
Lambart & Smyth Ltd. ... 101
Peter's Automatic Machines ... 101
Sanguard Appliances ... 89
Smith & Wellstood Ltd. ... 89
Spiral Tube Ltd. ... 106

FIRE PROTECTION
Nu-Swift Ltd. ... 116

FLOORING
Great Met. Flooring Co. 96
Perring, John Ltd. ... 116
Rubbafors Co., Ltd. ... 116

HEALTH SERVICES
Cresco Ltd. ... 95
Cuxson Gerrard & Co. ... 104
Deosan Ltd. ... 98
Freder Brothers ... 101
Harcraft Ltd. ... 101
Hunt & Collets Ltd. ... 100
Hygiene Products Ltd. ... 38
Lambart & Smyth Ltd. ... 101
Peter's Automatic Machines ... 101
Sanguard Appliances ... 89
Smith & Wellstood Ltd. ... 89
Spiral Tube Ltd. ... 106

HOTELS
Branksome Tower Hotel 110

INDUSTRIAL CLEANING
B.V.C. Engineering Co. ... 111
Dixon, R. G. & Co. Ltd. ... 88
Lamson Engineering Co. ... 88
Infra-red Drying ... 80
De la Rue, Thos. Ltd. ... 80
Letter Opening Machines ... 90
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LUBRICANTS
Price's Lubricants Ltd. ... 85
Shell Mex & B.P. Ltd. ... 87

MECHANICAL HANDLING
Lamson Engineering Co. ... 88
Lansing Bagnall Ltd. ... 88
Power Jacks Ltd. ... 86
Rubery Owen Ltd. ... 86
T. & T. Works Ltd. ... 109
Wingrove & Rogers Ltd. 84
Microfilm Cameras ... 71
Edison Swan Electric Co. 71
Kodak Ltd. ... 71
Motors (Re-conditioned) ... 19
Morris Commercial Cars ... 94
Noise Prevention ... 94
Burgess Products, Ltd. ... 94
Office Furniture (Steel) ... 19
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Bawn, W. B. & Co. Ltd. ... 116

MACHINES
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LIGHTING
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LOOSE LEAF LEDGERS & SYSTEMS
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

MACHINES
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LUBRICANTS
Price's Lubricants Ltd. ... 85
Shell Mex & B.P. Ltd. ... 87

MECHANICAL HANDLING
Lamson Engineering Co. ... 88
Lansing Bagnall Ltd. ... 88
Power Jacks Ltd. ... 86
Rubery Owen Ltd. ... 86
T. & T. Works Ltd. ... 109
Wingrove & Rogers Ltd. 84
Microfilm Cameras ... 71
Edison Swan Electric Co. 71
Kodak Ltd. ... 71
Motors (Re-conditioned) ... 19
Morris Commercial Cars ... 94
Noise Prevention ... 94
Burgess Products, Ltd. ... 94
Office Furniture (Steel) ... 19
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Bawn, W. B. & Co. Ltd. ... 116

MACHINES
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LUBRICANTS
Price's Lubricants Ltd. ... 85
Shell Mex & B.P. Ltd. ... 87

MECHANICAL HANDLING
Lamson Engineering Co. ... 88
Lansing Bagnall Ltd. ... 88
Power Jacks Ltd. ... 86
Rubery Owen Ltd. ... 86
T. & T. Works Ltd. ... 109
Wingrove & Rogers Ltd. 84
Microfilm Cameras ... 71
Edison Swan Electric Co. 71
Kodak Ltd. ... 71
Motors (Re-conditioned) ... 19
Morris Commercial Cars ... 94
Noise Prevention ... 94
Burgess Products, Ltd. ... 94
Office Furniture (Steel) ... 19
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Bawn, W. B. & Co. Ltd. ... 116

MACHINES
International Coin Counting Machine Co. Ltd. ... 14
Crompton-Parkinson ... 14
G.E.C. Ltd. ... 9, 92
Met-Vick Electrical Co. ... 18
Siemens Electric Lamps ... 91
Loose Leaf Ledgers & Systems ... 19
Art Metal Construction ... 19
Copeland-Chatterton Co. 8
Jones, Percy (Twinlock) ... 68
Kalamazoo Ltd. ... 21
Shannon Ltd. ... 64

LUBRICANTS
Price's Lubricants Ltd. ... 85
Shell Mex & B.P. Ltd. ... 87

MECHANICAL HANDLING
Lamson Engineering Co. ... 88
Lansing Bagnall Ltd. ... 88
Power Jacks Ltd. ... 86
Rubery Owen Ltd. ... 86
T. & T. Works Ltd. ... 109
Wingrove & Rogers Ltd. 84
Microfilm Cameras ... 71
Edison Swan Electric Co. 71
Kodak Ltd. ... 71
Motors (Re-conditioned) ... 19
Morris Commercial Cars ... 94
Noise Prevention ... 94
Burgess Products, Ltd. ... 94
Office Furniture (Steel) ... 19
Ameslock Ltd. ... 19
Art Metal Construction ... 19
Bawn, W. B. & Co. Ltd. ... 116

CAVE, C. W. & CO. LTD.

Constructors Ltd. ... 30
Dare-Ingis Ltd. ... 108
Evertaut Ltd. ... 105
Milner's Safe Co. Ltd. ... 82
Office Furnishers Ltd. ... 76
Office Machinery Ltd. ... 76
Perring, John Ltd. ... 59
Roneo Ltd. ... 59
Rubery Owen & Co. Ltd. ... 11
Tan-sad Chairs Co. ... 11

OFFICE FURNITURE (Wood)
Abbott Brothers (Southall) 65
Cave, C. W. & Co. Ltd. ... 13
Mason, E. N. & Sons ... 7
Myers of Moorgate ... 7
Office Furnishers Ltd. ... 76
Office Machinery Ltd. ... 76
Perring, John Ltd. ... 59
Shannon Ltd. ... 64
Simpoles Ltd. ... 71

OVERALLS
Wheeler, H. & Co. Ltd. ... 101

PACKING SUPPLIES
Bowaters Fibre Containers Ltd. ... 16
Britannia Folding Box ... 111
Gosheron, John & Co. Ltd. 111
Johns, Son & Watts ... 107
Jones, Samuel & Co. ... 6
Universal Pulp Containers Ltd. ... 6

PAINTS
British Paints Ltd. ... 101

PAPER MERCHANTS
Bowaters Sales Co. Ltd. ... 101

PARTITIONING
Anderson, C. F. & Son Ltd. 90

PENS & PENCILS
Venus Pencil Co. ... 101
Waterman Pen Co. Ltd. ... 101

PHOTOGRAPHIC REPRODUCTION
Edison Swan Electric Co. 71
Grant Production Co. Ltd. 73
Oxalid Co. Ltd. ... 112
Photostat Ltd. ... 96
Ruthart Ltd. ... 96

POSTAL FRANKING
Roneo-Neopost Ltd. ... 67
Universal Postal Frankers 67

PRESSINGS
Johnson, Thos. Ltd. ... 113

PRINTING MACHINES
Kaye's Rotaprint Ltd. ... 73

RIBBONS AND CARBONS
Columbia Ribbon Mfg. ... 15
Kolok Mfg. Co. ... 110
Richardson, W. J. & Sons ... 110

ROTARY REPRODUCER
Kaye's Rotaprint Ltd. ... 73

SAFES
Milner's Safe Co. Ltd. ... 82
Remington-Rand Ltd. ... 5

SEATING
Abix Ltd. ... 108
Dare-Ingis Products ... 108
Evertaut Ltd. ... 105
Morris, H. & Co. Ltd. ... 69
Leabank Chairs Ltd. ... 69
Office Machinery Ltd. ... 76
T.A. Products Ltd. ... 11
Tan-sad Chair Co. Ltd. ... 11

SORTING DEVICES
Ambidex Equipment Co. 116

STAPLERS
Loetz Abbott & Co. Ltd. ... 112

STEEL STORAGE EQUIPMENT
Brown, F. C. ... 113
Constructors Ltd. ... 30
Copeland-Chatterton Co. 8
Dexion Ltd. ... 2
Harvey, G. A. & Co. ... 77
Milner's Safe Co. Ltd. ... 82
Odoni, Alfred A. & Co. ... 112
Randallrak Ltd. ... 94
Roneo Ltd. ... 59
Westwood, Jos. & Co. Ltd. 106

TABULATING MACHINES
British Tabulating Machine Co. Ltd. ... 13
Cave, C. W. & Co. Ltd. ... 13
Powers-Samas Ltd. ... 10

STAPLERS

Loetz Abbott & Co. Ltd. ... 112

STEEL STORAGE EQUIPMENT

Brown, F. C. ... 113
Constructors Ltd. ... 30
Copeland-Chatterton Co. 8
Dexion Ltd. ... 2
Harvey, G. A. & Co. ... 77
Milner's Safe Co. Ltd. ... 82
Odoni, Alfred A. & Co. ... 112
Randallrak Ltd. ... 94
Roneo Ltd. ... 59
Westwood, Jos. & Co. Ltd. 106

TABULATING MACHINES

British Tabulating Machine Co. Ltd. ... 13
Cave, C. W. & Co. Ltd. ... 13
Powers-Samas Ltd. ... 10

TARPAULINS

Lomas, S. & Co. Ltd. ... 116

TELEPHONE AMPLIFIERS AND ACCESSORIES

Fonadek (Branson), Ltd. 107
Telvox Ltd. ... 94
Tellef (London) Ltd. ... 106

TELEPHONES AND SOUND EQUIPMENT

Central Rediffusion Services Ltd. ... 63
Communications Systems Ltd. ... 63
Dictograph Telephones ... 63
Edison Swan Electric Co. 71
Hadley Sound Equipment ... 71

Magneta Time Co. Ltd. ... 93
Philips Electrical Ltd. ... 96
Pye Telecommunications ... 31
Reliance Telephone Co. ... 23
Telephone Rentals Ltd. ... 23

TEMPERATURE CONTROL

Smith's English Clocks ... 12

TICKET PRINTING MACHINES

Dapag (1943), Ltd. ... 12

TILING

Woolliscroft, George & Sons ... 6

TIME RECORDERS

Blick Time Recorders ... 17
Dictograph Telephones ... 63
Gent & Co. Ltd. ... 109
Gledhill-Brook Ltd. ... 67
International Time Recording Co. Ltd. ... 67
Magna Time Co. Ltd. ... 93
Telephone Rentals Ltd. ... 23

TRANSFERS (Paint)

Trapinex Ltd. ... 11

TYPEWRITERS AND ACCESSORIES

Barlock (1925) Co. ... 110
British Olivetti Ltd. ... 27
British Typewriters Ltd. ... 27
Imperi Typewriter Co. ... 66
International Time Recording Co. Ltd. ... 67
Remington-Rand Ltd. ... 7
Royal Typewriters ... 22
T.S. (Office Equipment) ... 22
Taylor's Typewriter Co. ... 66
Vari-Typer Ltd. ... 75
Underwood, Elliott Fisher 40

VENTILATING EQUIPMENT

Colt Ventilation Ltd. ... 107
G.E.C. Ltd. ... 98
Walter, J. & H. Ltd. ... 98

VISIBLE RECORDS

Art Metal Construction ... 19
Bulmer's (Calculators) ... 13
Cave, C. W. & Co. Ltd. ... 8
Copeland-Chatterton Co. 8
Equipu Ltd. ... 72
Kalamazoo Ltd. ... 21
Mason, E. N. & Sons Ltd. ... 7
Remington-Rand Ltd. ... 7
Rollindex ... 59
Roneo Ltd. ... 59
Seldex Ltd. ... 64
Shannon Ltd. ... 64

WAGES PAYING MACHINES

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BUSINESS

The Journal of Management in Industry

CONTENTS FOR NOVEMBER, 1951

BUSINESS NEWS

	Page
THE MARCH OF BUSINESS	33
SALIENT FIGURES OF THE MONTH	35
TRENDS IN COTTON	37
LOOK OUT FOR WHAT'S NEW	47
BUSINESS CALLING	52

POLICY AND MANAGEMENT

LANCASHIRE LEARNS FROM U.K.-U.S. TEAMS	THE EDITOR	41
POLYSTYRENE, BIRTH OF AN INDUSTRY	A. E. BLAKE	48
SPEAKING TUBE TO TIME CONTROL	A. K. ASTBURY	54

ADMINISTRATION AND OFFICE PRACTICE

RADAR SPEEDS THE OFFICE MESSENGER	JULIAN ACOMB	58
THIS FIRM TAKES STOCK EVERY DAY	BRIAN CUMMINGS	62
NEW FOR YOUR OFFICE		66
SHORT CUTS TO OFFICE EFFICIENCY		74
OFFICE EQUIPMENT INDUSTRY NEWS		95
STATIONERY AND SUPPLIES		114

INDUSTRIAL MANAGEMENT AND EQUIPMENT

PUNCHED CARDS CONTROL PRODUCTION	ROBERT SPARK	78
X-RAYS SAVE SUSPECTED STOCK	A. G. THOMSON	81
INDUSTRIAL EQUIPMENT SURVEY		82

HEALTH—WELFARE—CANTEEN

INDUSTRY AND THE CHURCH	C. BRYANT	99
NEW STANDARD FOR STAFF CANTEENS	DAVID EARLY	103

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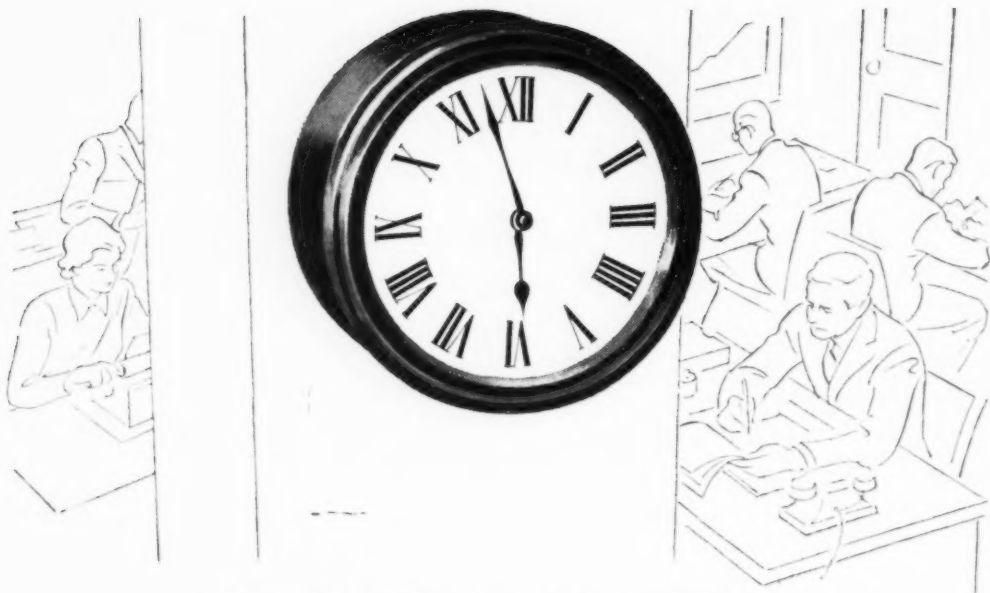
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The MARCH of BUSINESS

ELECTORAL INCENTIVES

THIS column rarely concerns itself directly with political matters. For one thing, most management problems and their solutions are neutral in political content, and can be encountered equally in government departments, nationalized industries and private enterprise concerns. For another, the pace is a little too hot for a monthly journal. These lines are written in the early stages of the election campaign, but will not appear until all is over bar the shouting. They can certainly not affect the result.

But if the course of the political stars is obscure, one thing seems certain: we shall hear a lot in the next few weeks on the question of incentives. It is significant that the first party political broadcast to occur after the announcement of the date of the election was devoted by the Conservative spokesman, Sir David Maxwell Fyfe, to a well-argued brief for the extended use of incentives and payment by results.

Most BUSINESS readers would agree that Sir David's thesis made sound sense. But it was also politically astute. The leaders of the Labour Party have for some time at least been paying lip-service to the need for greater incentives for the worker in industry, and (to give the devils their due) have succeeded in convincing a considerable section of the trade union movement that incentives are not just another capitalist trick for swelling the bosses' profits at the expense of the workers. In evidence, we may quote Mr. Bob Edwards, secretary of the Chemical Workers' Union, reporting to the recent annual conference of the union:—

"In the beginning, the Chemical Workers' Union was opposed to the general introduction of incentive schemes. Our members, like the workers in other industries, hated and feared the introduction of these schemes, and certainly not without good reason based on experience between the two wars. During the post-war years there has been an entirely new approach and a new appreciation of the purpose and consequence of incentive schemes."

But this new appreciation is still very limited. For every rank-

and-file trade unionist who has seen the light there are still five who have not. Some of these, of course, are diehard class-war fanatics. But there are many others, sound, honest men, who still feel that the "rate for the job," for which their fathers struggled, is something not to be lightly sacrificed. None of these men is likely to vote against the Labour Party; but if Labour candidates are preaching the same policy on incentives as their Conservative rivals, they may not, through disgust, doubt, or sheer bewilderment, vote at all. And that prospect must be causing some headaches in Transport House.

Perhaps this explains a certain change in emphasis that has been noticeable among Labour speakers. Some weeks ago, for instance, Mr. Gaitskell rather staggered the business world by a passing commendation of profit-sharing. More recently Mr. L. J. Callaghan, Parliamentary Secretary to the Admiralty, has been canvassing the establishment of a compulsory "workers' fund," and has cited Mr. Lincoln Evans, of the T.U.C., as a supporter of the idea. Every firm



An American firm with offices occupying the whole of one floor of a large building have installed an electric guide opposite the lift. Each knob bears the name of an executive. When a knob is pressed, the office of that executive, and the path to it, lights up on the chart.

would have to start such a fund and pay into it each year a fixed proportion of profits for distribution to workers, the exact proportion apparently being decided in ratio to the dividend paid.

This trend represents something of a volte-face in Labour thinking, for it was the Labour Government that, when it nationalized the gas industry, deliberately destroyed one of the most successful profit-sharing schemes in the country. Its belated conversion must be regarded with caution. There is a strong case to be made for profit-sharing—and BUSINESS made it as recently as August last, when it described four major schemes voluntarily adopted by firms in private industry. But successful profit-sharing as an incentive is essentially a secondary force. Before it can be applied there must already be (wherever possible) more direct incentives to individual effort, such as piece-work, together with sound management policies and good management-labour relations. Without these, the annual bonus comes to be regarded by the workers as an addition to wages to which they are entitled as by right, and thus loses all incentive value. The amount received by each worker, moreover, is determined, not by his own competence, but by that of the management. The ultimate effect on any universal compulsory system of profit-sharing, therefore, would be merely to constitute a further tax on industrial profits that would bear more heavily on the efficient than on the inefficient firm.

★ ★ ★ ★

ONE further reason for this change of heart occurs to us. For the last five years, Labour members at Westminster have been paid on a day-rate basis. Now they face the prospect of work in a different sphere where they may well be paid by results, and their remuneration may depend on their efficiency. But perhaps we are being uncharitable.

★ ★ ★ ★

BUILDING UNDER FIRE

THE building industry has recently come in for some caustic criticism. At the final ses-

12

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sion of the Building Research Congress, Sir Ben Lockspeiser, secretary of the Department of Scientific and Industrial Research, said bluntly that it was, in general, backward; that its standard of technological education was low, and that it was either unwilling or unable to learn from science. There was, he said, a close relationship between productivity and the use of machinery. The worker in the building and civil engineering industry had, in 1935, on an average no more than $\frac{1}{2}$ h.p. at his elbow, compared with the national figure of $2\frac{1}{2}$ h.p. for all other manufacturing industries. Since then, the ratio had moved still further to the disadvantage of the builders.

The building industry is predominantly a small-firm industry. In 1950 there were 128,564 active registered firms, of which over a third were one-man concerns. There were, in fact, more registered firms than bricklayers. Sir Ben suggested that it was time the industry reorganized itself so that the small firms could become efficient, particularly in specialist activities, with sub-contractors grouped regionally round the main contractors.

The lack of training facilities for craftsmen was also severely criticised by Sir Thomas Bennett, chairman of Crawley and Stevenage Development Corporations, at the annual conference of the Institute of Housing. The industry, he claimed, had continually pressed the claims of the lowest-paid workers, whose wages had become so close to those of the craftsmen that the additional wage incentive was out of step with the labour involved in becoming trained.

The shortage of apprentices has also been underlined in a report made by the Building Apprenticeship and Training Council, on which building employers and trade unions are represented, to the Minister of Works.

★ ★ ★ ★

THE Institute of Industrial Administration has been merged with the British Institute of Management. All members of the I.I.A. become Founder Members, Associates or Students of the B.I.M. Membership of the B.I.M. has never been intended to constitute a professional qualification, and the I.I.A. has therefore been incorporated as a general management professional institute within the framework of the B.I.M., its membership being open only to members of the B.I.M. It thus becomes, in effect, the professional

NOVEMBER, 1951

SALIENT FIGURES OF THE MONTH

	Latest Month (1946=100)	Increase (+) or Decrease (—) on	
		Month Ago	Year Ago
"BUSINESS" INDICES			
Production ...	146.6	+ 3.5	+ 9.5
Purchasing Power ...	110.5	+ 0.1	+ 2.3

MANPOWER

Total manufacturing industries ... (thousands)	4,725	+ 42	+ 282
Cotton spinning and weaving do.	331.3	— 1.6	+ 6.0
Coal (on colliery books) ... do.	699	— 2	+ 4
Reg. unemployed (U.K.) ... do.	227.7	+ 18.0	— 85.2

PRODUCTION

Index of production (1946=100)	139	— 10	+ 5
Coal (average weekly output) ... (thousand tons)	3,468	— 472	+ 70
Steel ingots and castings (do.) do.	266	+ 10	— 13
Cotton yarn (do.) (million lb.)	15.87	— 0.72	+ 0.15
Woven wool fabrics (do.) (million linear yards)	35.73	— 0.98	+ 2.05
Passenger cars (do.) ... (thousands)	6.49	— 1.13	— 1.20
Commercial vehicles (do.) ... do.	3.74	— 1.24	— 0.30
Permanent houses completed do.	15.97	— 1.23	— 1.04

TRADE

Value of imports (£ millions)	433.7	— 31.1	+ 143.5
Value of exports ... do.	207.3	— 18.9	+ 35.9
Freight train traffic (million tons)	4.53	— 0.81	+ 0.01
Retail sales ... (1947=100)	140	— 10	+ 10

FINANCE

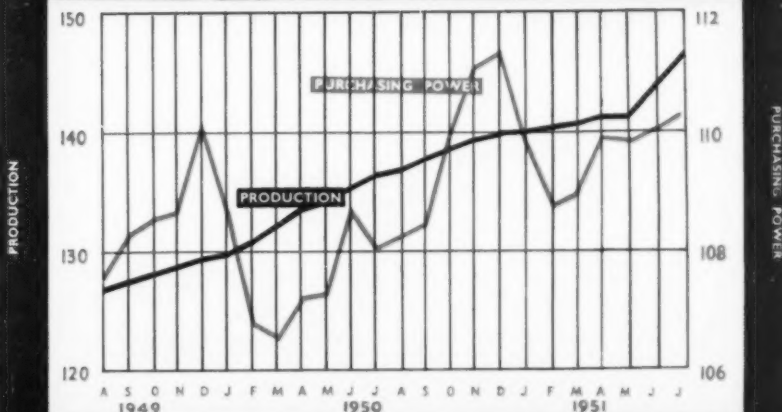
Currency in circulation (£ m.)	1,328	+ 2	+ 52
Deposits in London Clearing Banks ... do.	6,133	— 41	+ 105
Provincial cheque clearings (av. working day) ... do.	7.07	— 0.06	+ 0.82

WAGES AND PRICES

Weekly wage rates (1947=100)	120	+ 1	+ 10
Retail prices ... do.	127	+ 1	+ 14
Raw material prices (1949=100)	178.5	— 9.1	+ 39.7
Mech. eng. ind. do.	136.9	+ 5.5	+ 21.6
Elec. machinery do.	156.4	+ 3.6	+ 32.1
Building, etc. do.	131.1	+ 2.2	+ 23.6
Import prices (1950=100)	138	— 4	+ 38
Export prices do.	124	+ 2	+ 24

* July. † September. ‡ Four weeks to August 12th, 1951.

"BUSINESS" INDICES (1946=100)





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wing of the B.I.M. The local centres and groups of the I.I.A. will remain intact.

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CAN GERMANY COMPETE?

GROWING concern has been expressed in recent months by many businessmen at the growth of German competition in export markets. Dr. H. Catleen, whose articles on export subjects will be familiar to **BUSINESS** readers, has recently returned from a long tour of the Western Zones, during which he lectured to many German Chambers of Industry. From conversations with hundreds of Germans, from Ministers to small businessmen, Dr. Catleen suggests that British fears may well be exaggerated.

In the first place, destruction in all German cities was on such a vast scale that even today, six years after the end of the war, only about 10 per cent. of the damage has been made good; the complete rehabilitation of German industry will take a generation.

Nor are German manufacturers (as yet, at any rate) thinking in terms of world-wide export. Germany is now concentrating on "doorstep" export to European countries, such as Holland, Switzerland, Scandinavia and Italy. There is a growing export trade to the U.S.A. (£30m. in 1950 and probably £60m. this year), but this was for the most part achieved through and with the assistance of the local American administration, and cannot be regarded as the consequence of "export-mindedness."

All German businessmen bitterly lament the loss of their pre-war "natural" markets because of difficulties arising from import and other restrictions, and are convinced that these are imposed specifically against Germany. Any

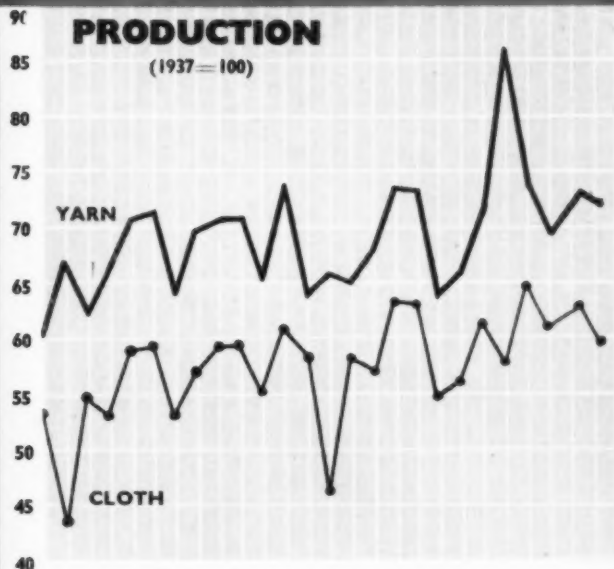
HOW THE CHART IS CALCULATED

The chart shows (a) three-monthly moving averages of production of cotton yarn and of cloth, expressed as a percentage of the corresponding average monthly output in 1937, (b) monthly exports of cotton yarn and cloth expressed as a percentage of the corresponding monthly average exports in 1938, and (c) the average monthly price of cotton yarn and cloth, expressed as a percentage of the corresponding price on June 30, 1949.

TRENDS IN COTTON

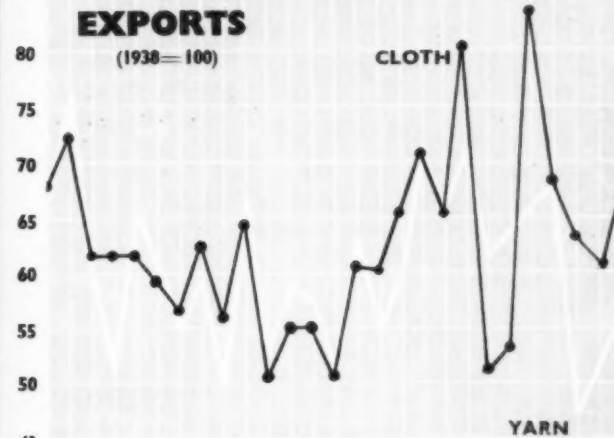
PRODUCTION

(1937=100)



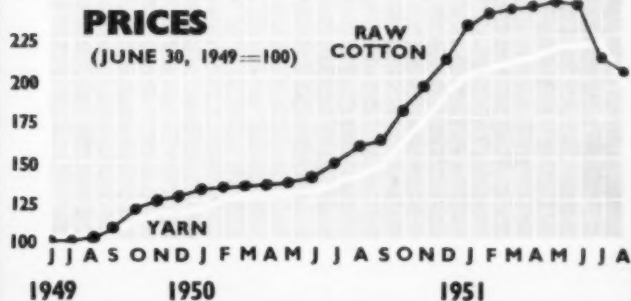
EXPORTS

(1938=100)



PRICES

(JUNE 30, 1949=100)



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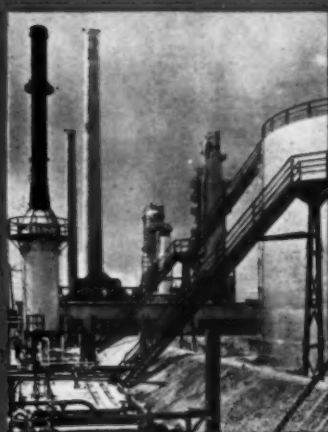
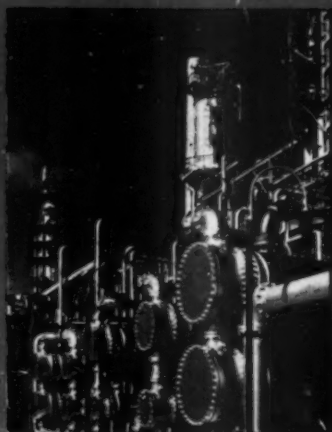
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The new Esso refinery at Fawley, on Southampton Water, erected at a cost of £37,500,000 in only 27 months, is the largest oil refinery in Europe, and one of the largest in the world. Over 5,000 men, with 27 American supervisors, worked on its construction. They used 169,000 cubic yards of concrete, 100,000 tons of steel and 300 miles of pipe.

When completed, the new refinery will produce six million tons of petroleum products a year—a quarter of Britain's total consumption. Our photographs show (left) the single-stage and two-stage crude units with heat exchangers in the foreground; (centre) the fuel oil heater of the boiler plant; (right) the catalytic cracking plant (the "cat-cracker"), which will produce a million gallons of motor spirit a day.

suggestion that other exporting countries are suffering equally is met with suspicion.

"Suspicion is the mainspring that moves each and every German businessman," says Dr. Catleen. "He suspects everyone—his own colleagues, his employees, his own Government Departments, his customers and suppliers, whether inside or outside Germany. This general suspicion, which is hamstringing trade, is a hangover from the Hitler regime, which trained every German to watch and suspect his neighbour."

Another important factor that is ignored in this country is the growth of corruption in German life, which has now reached such an extent that it presents a major menace to the economic rebuilding of the German State.

Population problems are a further drag on recovery. Many Germans wish to emigrate, but are discouraged from doing so partly for fear of their reception overseas, and partly by Government policy. But there are more than 12 million refugees in Germany, with another half-million fleeing through the Iron Curtain each year, and these, together with more than 2,500,000 unemployed, constitute a major economic problem.

"All these facts," suggests Dr.

Catleen, "contribute to a conclusion that German competition on world markets, except for a few specialized products, will not make itself felt too heavily for some time to come. Obsolete machinery (except in Marshall-aided industries), limited factory space, housing difficulties, scarcity of raw materials, a lower standard of skill amongst skilled workers, and a lack of experienced export staff (Germany has been out of world markets for 13 years) will all play their part in delaying Germany's re-entry into the markets of the world, notwithstanding that German workers have lower wages, a lower standard of living, and a higher output per man-hour than British workers."

★ ★ ★ ★

"**T**OO old at forty" is a slogan that retains a surprising virility even during a period of acute labour shortage. With an ageing population, its demise becomes even more overdue. A new association, the Forty Plus Association, has recently been formed to achieve this end. We wish it well, but we anticipate that its founder will not find too easy, a

task that has so far baffled many existing welfare organizations.

★ ★ ★ ★

COAL TOMORROW

THE short-term answer to the coal problem, according to Dr. J. Bronowski, director of the National Coal Board's central research establishment at Stoke Orchard (Glos.), is the better utilization of coal-dust. As mentioned last month, some municipal authorities are already producing briquettes from cinders. Much larger quantities could be produced from coal dust—about 10 per cent. of total output, or some 20 million tons a year—of the total amount of coal produced at the mines.

Annual production of the initial types of briquette have already reached a million tons a year, and a 1½lb. "cobble" briquette has also been produced on an experimental scale and successfully tried out in locomotives.

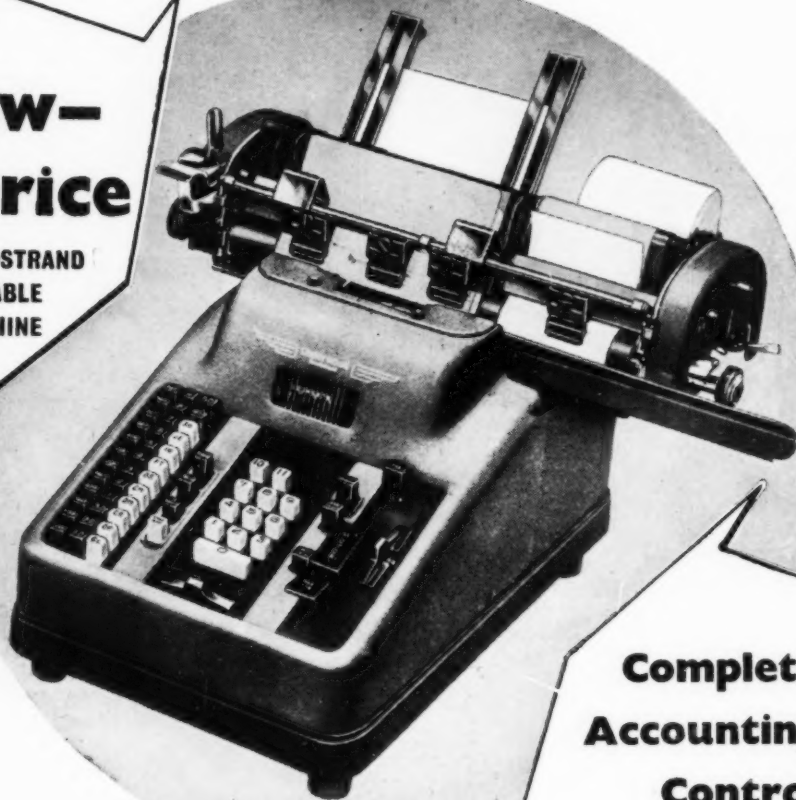
Large-scale briquetting, suggested Dr. Bronowski, might well lead to changes in methods of coal-cutting, and he envisaged machines that would scrape the coal from the seams so that it could be piped to the surface suspended in water in the form of dust and small lumps less than three inches in size.

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Lancashire is Learning From Anglo-U.S. Teams

By THE EDITOR

THE Anglo-American Council on Productivity was set up in the autumn of 1948 to "promote economic well-being by a free exchange of knowledge in the realm of industrial organization, method and technique, and thereby to assist British industry to raise the level of its productivity." In the three years that have since elapsed, the Council has been extremely active. Over 50 teams have visited the United States, and of these, 36 have published reports in an ever-increasing stream—three bulky volumes arrived on the editorial desk recently within a week.

These reports have all been well-written, admirably produced and widely circulated. They are full of technical descriptions of modern American machinery. They contain details of modern management methods in actual application. For the most part, they express the unanimous opinion of the team:—management and labour alike—that the adoption of some or all of these would increase productivity in British industry. They are thus of high potential value. But the question still remains: what, if any, use is being made of them? Are British businessmen taking note of the recommendations of these teams? Or are the reports merely being pigeonholed.

To get an answer to these questions, *BUSINESS* went to Lancashire. The destination was de-

cided by the statement of Mr. Lincoln Evans, a joint chairman of the Council (representing the T.U.C.), that the cotton industry had done more to implement its teams' recommendations than any other—a statement made at the recent annual conference of the Institution of Production Engineers.

Lancashire, *BUSINESS* found, while fully appreciative of the compliment intended, was a little dubious as to its warranty. The problem is a difficult one. There have certainly been changes in Lancashire, which is to-day enjoying a prosperity she has not known for a generation. In 1913, the Lancashire cotton trade was the oldest, the largest and the most successful in the world. It wove 8 000 million yards of cloth in a year. With one-eighth part of this it clothed Britain; all the rest, 7,000 million yards, it shipped abroad. So great was its pre-eminence abroad that it did 70 per cent. of the total world trade in exported cottons, and was so highly efficient that, in spite of a complete lack of protection, hardly a lorry load of cotton goods came into the country.

The war came, and the post-war growth of tariff barriers. Lancashire lost the Indian market. Japanese competition, based on cheap labour, flooded the world with cotton goods. By 1923 the 7,000 million yards had shrunk to 4,000 million. By 1931 it had

Last month, the Anglo-U.S. Council on Productivity celebrated its third birthday. So far it has sent over fifty teams to the United States to discover the secrets of high productivity in America. Many of these teams have issued their reports—some of them over eighteen months ago. Here is a first-hand account of the way in which the cotton industry is using the lessons learned by the three cotton teams to boost productivity in Lancashire.

shrunk to 2,000 million, and has never since risen above that figure. Between 1918 and 1940, 800 cotton mills in Lancashire shut down, 21 million spindles were broken up, 350,000 looms were abandoned, and 345,000 operatives lost their jobs. The war, with its concentration scheme and the compulsory transfer of thousands of the remaining operatives to armament industries completed the catastrophe.

In 1945, Lancashire faced a reconstruction problem greater than that of any other industry. She tackled it resolutely, with considerable assistance (in many instances a doubtful asset), from the Government. Changes came quickly. The Evershed Committee sat to review wages and organization problems

The Problem

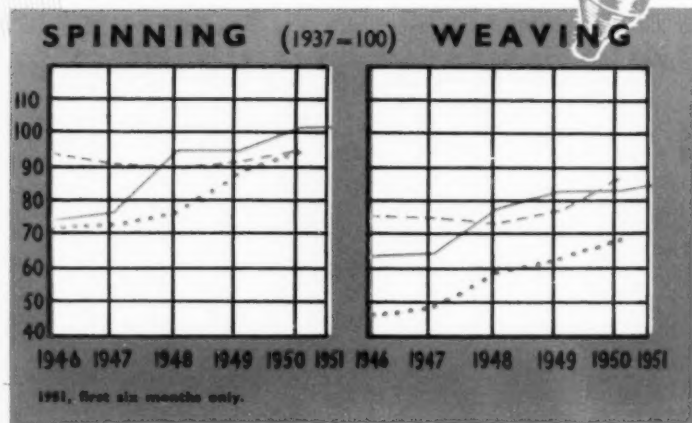
in spinning. The Moelwyn Hughes Commission did the same for weaving. The war-time Cotton Board was made permanent. The first Working Party was set up to study these and other reports. Immediately afterwards, another Platt Committee investigated textile machinery. The Raw Cotton Commission took over from the Liverpool Cotton Exchange.

And, in the midst of all this official activity, individual firms were getting on with the job of working out their own reorganization schemes, adapting their policies to changed conditions, and straining every nerve to meet the demands of a sellers' market such as they had not known for nearly 40 years.

The Burning Issue

The major problem was that of building up the labour force. Many of the operatives transferred to war work never came back, and because of the past history of the industry, juvenile recruitment had fallen away practically to nothing. In 1946, the Cotton Working Party thought that the total labour force in cotton spinning, doubling and weaving would never again exceed 250,000. (Today it is over 316,000.) The conclusion was that, if the demand for cotton goods was to be met, productivity would have to be increased. Hence the question of productivity became a burning issue in Lancashire long before the A.A.C.P. was thought of. Indeed, even before the war, leading firms had quietly been going through the revolution.

The history of Clegg's is a case in point. Sir Cuthbert E. Clegg, chairman and joint managing director of Clegg and Orr, Ltd., cotton spinners and manufac-



turers, is, as president of the British Employers' Confederation, a member of the Anglo-American Council. As such, he has naturally been interested in the reports of the council on cotton spinning, and some of the recommendations have been adopted in his mills. But when the American reciprocal team came over to Britain and inspected, among others, the Shore Mills at Littleborough, which belong to a subsidiary, Sir Cuthbert felt bound to point out that the high degree of mechanization they found there had, in fact, been the result of a continuing programme over three generations.

The post-war mechanization programme in Lancashire is thus an acceleration of a long-term trend. Just how rapid the acceleration has been remains obscure, since no overall details are available. But in 1948, when the Census of Production was taken, capital investment by the cotton industry amounted to £7,500,000. Practically the whole of this went into machinery—there has been very little factory building for cotton in Lancashire in recent years.

Similarly, a considerable amount of redeployment had been carried out before the A.A.C.P. teams left, particularly in the weaving section of the industry. In July and

August, 1949, BUSINESS described what 10 progressive firms had achieved in this direction.

In view of this, there may be a disposition to ask of the teams: "Was your journey really necessary?" Cold facts suggest that they were. However much has been done, there still remains much to do. If the leading firms in the industry have set their house in order, there are plenty of backwoodsmen in the industry who have not.

Consider the facts. In 1937, 185,000 spinning operatives produced 26,480,000lb. of yarn, an output of 142.5lb. per head. In 1946, 139,600 operatives produced 19,030,000lb. of yarn, an output of 136.3lb. per head. In 1950, 185,900 operatives produced 25,190,000lb., an output of 135.5lb. per head. Thus while the spinning section has made good its labour forces, the productivity of its workers is some 16 per cent. lower than in 1937, and, over the last few years, has shown little sign of improving, in spite of increased mechanization.

There are, of course, certain obvious reasons. The introduction of the 45-hour week, for instance, has not been followed by the upsurge in productivity that its protagonists expected. In 1937, too, Lancashire bought the pick of the

The Answer

I. DISSEMINATION



11,250 Copies

world's cotton; today, because of the dollar shortage, she must take what the Raw Cotton Commission can purchase from Egypt, India and other sterling areas. This comparatively low-grade cotton needs greater skill and effort in blending and processing, if yarn quality is to be maintained. This naturally takes more time, and hence reduces productivity. But to explain is not necessarily to excuse.

In the weaving section, the picture is even worse. In 1937, 176,400 operatives produced 79,300,000 yards of cloth, an output of 452.1 yards per head. In 1946, 110,500 operatives produced 38,000,000 yards, an output of 343.9 yards per head. In 1950, 144,400 operatives produced 54,400,000 yards, an output of 376.7 yards per head. Here, the labour force is still 17½ per cent. below the 1937 figure, while productivity per head is 20 per cent. down. Though productivity has been steadily improving ever since 1946, it is obvious that there is still a considerable leeway to be made up before the pre-war figures can be reached, let alone surpassed. There is obviously no cause for complacency.

U.S. Productivity

The three cotton teams, representing spinning, doubling and weaving, spent six weeks in October and November, 1949, visiting American plants. They found that productivity in the American spinning industry was considerably higher than in Britain. "For every 100 operatives required to produce a given quantity of roving in a given time in the U.S.A.," they wrote in their report, "either 263,



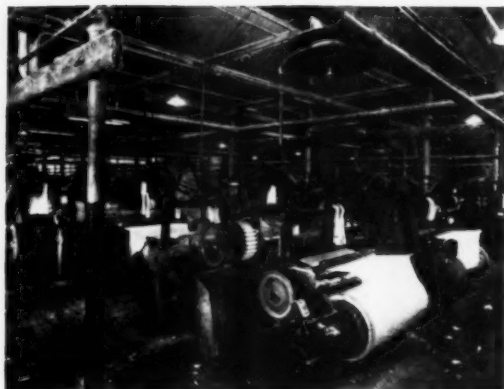
197 or 153 operatives, according to the basis of comparison taken, would be required to produce the same quantity in the same time in England. For every 100 operatives required to produce a given quantity of yarn in a given time in the U.S.A., either 283 or 193 operatives, according to the basis of comparison taken, would be required to produce the same quantity in the same time in England."

The reasons for these discrepancies are complex, and are analyzed in the report in great detail. Suffice to say here that the team found nothing basically new in machinery that was not available in Britain. Nor did they find that American workers worked harder than British. The 28 reasons enumerated in their conclusions are, for the most part, purely matters of good management. And

The Answer

2. IMPLEMENTATION

Machines



Transformation at the Landlake Mill of E. Clegg & Son, Ltd. The weaving room before and after reconstruction. No production was lost in the changeover.

the obvious conclusion that has to be drawn is that Americans manage their businesses better. It may be easier for them to do so because of their happier relations with government and trade unions but there would seem to be no reason, in principle, why British managements should not ultimately obtain the same results.

1. DISSEMINATION

To reach such conclusions, unpalatable as they may be, was not difficult though it demanded moral courage. To convince the rest of Lancashire of their cogency was another matter. But this the team, with the energetic backing of the London organization, proceeded to do.

The first step was to secure the maximum dissemination of the Spinning team's report, published on March 16, 1950. Helped by press publicity, some 10,000 copies

have so far been distributed in Lancashire.

The widespread diffusion of the report created something of a furore, and to capitalize this, members of the team took part in a county-wide campaign of meetings designed to drive home the lessons learned. The first meeting was held at Oldham on March 23, one week after the issue of the report. Between then and June 26 (with a break from April 22 to May 5), 29 meetings were addressed by members of the team. This meant that on occasion two meetings a day had to be held, but, in spite of this, an average of 11 members out of the 13 in the team attended each meeting.

All sections of the industry were covered by these meetings. Each local branch of the Federation of Master Cotton Spinners arranged a meeting or meetings in its own town, to which directors, managers and overlookers were invited. A total of 24 meet-

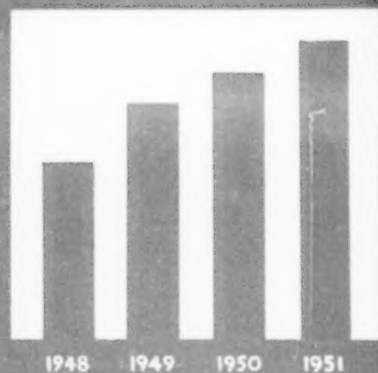
ings has been held with an aggregate attendance of 2,600—the great majority of management and staff in the industry. Members of the Works Managers' Association and the Textile Officials' Association attended these meetings, but, in addition, the leader of the team attended as a guest speaker at the annual conferences of these organizations. The Cotton Board invited the team to attend a conference of work study men at St. Anne's, at which a special session was devoted to discussion of the report, and further questions arising out of the report were discussed at the annual Cotton Board conference at Harrogate last month.

Meeting the Unions

On the operatives' side, the team accepted invitations to attend a representative meeting of district executives of the Card Room

Methods

SPINNING MILLS USING WORK STUDY METHODS



A session in progress at the Cotton Board's pilot work study school for cotton spinning and doubling workers.

Amalgamation in April and a similar meeting of the Spinners' Amalgamation in May. Meetings also took place with a number (though by no means all) the local trade union associations. These followed the same lines as the local employers' meetings, with short introductory talks and plenty of time for questions.

A special summary of the report, written specifically for operatives, was issued some months after the publication of the full report, and 50,000 copies (about one to every two operatives) were distributed to all mills in Lancashire. This summary was sponsored by the Cotton Board.

With the exception of small meetings held by the many local textile institutes and study groups, and outside bodies such as the Manchester branch of the Institute of Personnel Management, it was arranged on principle that there should be separate meetings for management and operatives. The idea was to avoid unfruitful arguments between sections of the audience, and to ensure that operatives felt quite free to speak out. Management, technician and operative members of the team,

however, have been present at all meetings.

2. IMPLEMENTATION

There is little doubt that dissemination of the report has been highly successful. But how far has it led to action? The major difficulty in answering this question is to disentangle action due to the impact of the reports from action that would have been taken any way. All that can really be said is that, since the appearance of the report, the Textile Machinery Manufacturers have reported increased enquiries and orders for blending hopper feeders, high-draft speed frames, large gauging frames, and travelling overhead cleaners for ring frames—all machines whose increased use was advocated in the report.

The overhead travelling cleaners offer the clearest proof of the effect of the report. One particular make, the Parks-Cramer, was illustrated. As a result of this publicity, arrangements were made with the Board of Trade to import 12 units for trial purposes, and, as a result

of the demand, arrangements have now been made for the production of the Parks-Cramer and another similar cleaner under licence in this country. All the labour-saving devices mentioned in the report have been tried out since the return of the team, many have been adopted, and some have even been improved. A register of manufacturers of such equipment has been built up and is being maintained by the Federation.

On the processing side, both the Federation and the British Cotton Industry Research Association (the Shirley Institute) report (though statistical evidence is necessarily lacking) that very much more attention is being paid to end-breakage rates and their reduction and the carrying out of good maintenance schedules.

New Lines of Research

Research work, too, has been re-orientated to some extent as a result of the team's visit, and both the Shirley Institute and the Textile Machinery Manufacturers have opened up new lines of research which will, it is hoped,

The Answer

3. RESULTS

eventually contribute to higher productivity in the industry.

Perhaps the biggest bone of contention in Lancashire, however, is the introduction of work study. The use of work study has been gaining ground rapidly in recent years, and the total number of mills using work study principles has risen from 84 in 1948 to about 130 today, or about a quarter of all mills in Lancashire. But there still remains a hard core of opposition to work study both among trade union officials and among mill managers. The fact that the cotton teams came out unanimously and strongly in favour of the fullest use of work study has undoubtedly had a considerable effect in reducing that opposition.

Agreement the Key

The full development of work study, and the full implementation of major developments arising from the report, however, really depend on the extent to which the Federation and the Trade Union Amalgamations can get together and come to some agreement on matters where existing joint agreements are affected. There is a close connection between the installation of new or converted machinery and the redistribution of man-power as and when justified. To tackle this on the lines suggested by the team, however, would mean radical alteration of the whole wages structure of the industry, a step that no one will view lightly. The whole matter is still at a very early stage of discussion between the Federation and the unions, and it would be hazardous to make any prediction as to the ultimate outcome of these negotiations, or even to prophesy whether they will have any result.

THE AMERICANS LOOK AT LANCASHIRE



An American reciprocal team visited Lancashire in June this year.

At the end of their visit, they reported:—
On the whole, our impressions are favourable.
In almost every mill visited, we found new machinery installed, or being installed. In addition, in many plants improvements have been made in existing machinery.
Excellent results have been achieved (with redeployment) in Lancashire where planning and education were completed well in advance of the start of redeployment.
Modernization and re-equipment programmes and productivity efforts should be augmented and accelerated.

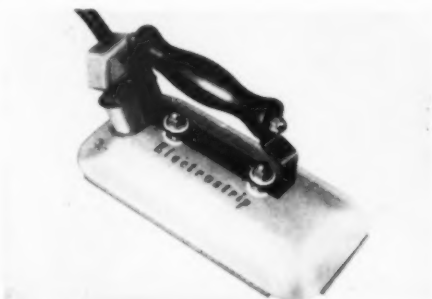
The emphasis has so far been laid on cotton spinning, but the reports on cotton doubling, published on May 23, 1950, and on cotton weaving, published on June 22, 1950, were each followed by action on dissemination and implementation similar to that enjoyed by the cotton spinning report. Cotton doubling, however, is a much smaller section of the industry, and the action was consequently more restricted in scale.

In weaving, a further factor somewhat dampened the enthusiasm of Lancashire's reception of the team. The American industry consists entirely of power

looms, while the bulk of Lancashire's output still comes from hand looms, though power looms are being installed at a steady pace. This difference in the structure of the industry, however, necessarily restricts the lessons that one might learn from the other.

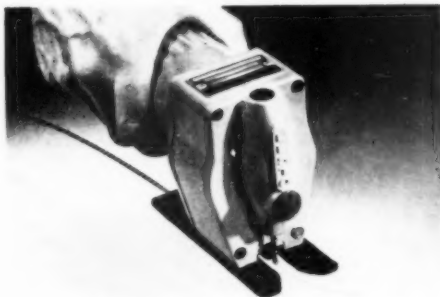
But both in doubling and weaving, the activities of the teams have definitely assisted in creating a state of mind in which both management and operatives are prepared to consider measures for increasing productivity that, a few years ago, would have been laughed out of court.

Look Out for WHAT'S NEW



COAT STRIPPER

NOT an electric iron, but the *Electrostrip* paint remover—modern equivalent of the blow-lamp. Ready for use within minutes of switching on, the tool eliminates priming, pumping and refuelling. is economical in use and reduces the risk of fire and cracked window panes. The stripper radiates enough heat to remove paint even from corners and crevices where direct contact is impossible.



POWER CUTTER

CUTTING along the dotted—or any other C—line is a simple matter with the *Lesto* electric saw. Light enough to be held without fatigue in one hand (it weighs less than 6lb.), the saw will rapidly cut sheet metal, hardboard, plastic, wood and even asbestos. Reciprocating speed of the interchangeable blades is 2,300 strokes a minute. Attachments enable the saw to be used for special jobs such as cutting dovetails.



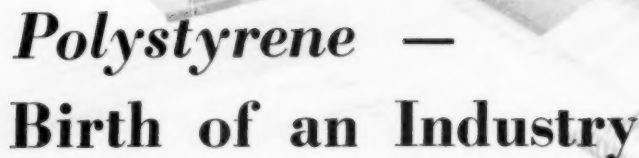
LIGHTENING EFFECT

REPLACING a fuse or mending a switch in the dark, whilst trying to hold a torch, screwdriver and screw, can fray any temper. The *Spotlight* screwdriver offers a cunning solution. Its blade is embedded in a plastic lens and a bulb and battery are housed in the handle. When the cap is screwed down, a beam of light is thrown along the blade illuminating the work. The tools are available in two sizes.



REVOLUTIONARY WATCH

A COMBINED stop-watch and revolution counter, this instrument—the *Chronocounter*—records revolutions over a period of one minute. This type of reading is valuable when revolution rates vary during running. Three types of adaptor allow the *Chronocounter* to be used on a variety of machines. The instrument can also be used as a straightforward counter of up to 1,000 revolutions, or as a stop-watch.



Polystyrene — Birth of an Industry

By A. E. BLAKE

THE birth and growth of a new industry are always an absorbing spectacle for the businessman, even when it is an industry with which he personally is not concerned. For every new industry must necessarily have its repercussions on the old, direct or indirect. It may offer new raw materials; its product may replace an established commodity. And even if it offers nothing else, it provides a case-history in enterprise, an indication of the way in which industrial expansion can occur and is occurring.

This is important, for the pattern of enterprise changes with changing economic conditions. In the nineteenth century, a new industry began with a single firm, that, expanding from small beginnings, prospered and eventually provoked competition from others. To-day, in many industries, the scale of operations demands capital investments that render such a gradual expansion impossible. The industry must start big, or not start at all.

Polystyrene is a case in point. A new product, with a proved record overseas, it, nevertheless, has required the combined resources of large and well-established companies to launch it on the British market. And this factor has shaped and even determined the pattern of its development.

The beginning was simple. When Mr. P. C. Chaumeton chanced to meet Dr. Franz Kind in a Manchester hotel shortly before the end of the war their conversation was naturally the sort of professional "shop" that chemical engineers talk off duty. But, besides being chemical engineers of distinction—Chaumeton in cellulose

acetate processes, and Kind in petroleum chemistry—they had both graduated into business management and were at work on their companies' schemes for post-war expansion.

These pre-occupations could not be altogether kept out of their conversation. Chaumeton, as technical director of Erinoid, Ltd., was concerned in the main with his company's raw material supply problems, like most businessmen in the post-war decade. Kind, a managing director of Petrochemicals, Ltd., was responsible for the technical direction of a scheme for the first great petroleum chemicals complex in this country. During their talk it became clear that, at one point at least, their problems were complementary.

Polystyrene Progress

Erinoid, as makers of moulding powders, had watched the spectacular rise of polystyrene plastics in the States and Germany, and were on the look-out for a source of supply of the polymer to meet the inevitable demand in this country. Petrochemicals, although fully occupied with the technical and financial problems of establishing a novel process, were alert for large-scale outlets for the products not only of the main plant under construction, but of the auxiliary plants projected to work up the basic chemicals produced by their Catarole process. Petrochemicals' scheme, backed by the Finance Corporation for Industry, had from the beginning counted on attracting to the 800-acre site surrounding the Catarole plant at Partington, Manchester, factories

Britain's mammoth oil-refining programme is laying the foundations for a vast expansion of her chemical industry—and the creation of new industries. Polystyrene—a plastic offering immense possibilities to businessmen in a hundred different industries—is one of these new industries that are springing fully fledged from the union of large undertakings who are pooling money and experience to pioneer new ventures.

capable of using its liquid and gaseous products, piped directly from plant to plant. The plastic Erinoid needed is made from a compound derived from benzene and ethylene, both of which are cracked from oil distillates at Partington, and it is one of the characteristics of the Catarole process that it produces both these chemicals in large yields, whereas conventional cracking yields either, but not both, of them.

The opportunity for collaboration was explored in negotiations that led to the formation of a £400,000 company, Styrene Products, Ltd., in which Petrochemicals took a 60 per cent. interest and Erinoid 40 per cent. The new company's plant, built to produce between 5,000 and 6,000 tons a year, came into production in October, 1950, a week or two too late to have the distinction of being the first British polystyrene plant. A rival plant, believed to have a production capacity of the same order, was built by Monsanto Chemicals, Ltd., at Newport. A third plant, owned by British Resin Products, Ltd., a subsidiary of the Distillers Co., Ltd., is also producing in commercial quantities. Both Monsanto and B.R.P. will eventually obtain their raw material from a plant being erected at Grangemouth. Monsanto, Distillers and the Anglo-Iranian Oil Co. are jointly interested in this unit, which forms part of a great new refinery installation.

The British plastics moulding industry now has at its disposal large supplies of a material which has been described as the first modern packaging material that can rival glass in appearance and

cheapness and can replace metals in several applications. From a calculation based upon American experience and the capacity of the presses installed and ordered by the 190 injection moulders in this country, it is estimated that the sales potential of polystyrene is about 350 tons a week. The combined capacity of the two major resin plants is not more than 80 per cent. of this figure.

From the fact that there is a ready market for every pound that can be made, although home production is not less than five times the quantity formerly imported, it would seem that polystyrene will repeat in this country the success it has had in the States. Production of polystyrene in the U.S.A. is double that of phenol formaldehyde moulding powders and has increased sixfold since 1943, during which time the sales of cellulose acetate powders—direct competitor of polystyrene for injection moulding—remained more or less stable until the recent boom, when cellulose acetate became a scarce material.

Polystyrene is the lightest of all the thermoplastics, being very little heavier than water; a square foot slab, 1 in. thick, weighing only 5½ lb. It is completely unaffected by water, brilliantly clear and resistant to chemical attack from most acids in the usual concentrations and from oils and alcohols. Allied with its inertness to water, its freedom from odour and taste commends its use for food containers.

It is not as tough as cellulose acetate, but it is strong enough for the great majority of moulded pro-

ducts. For applications in which greater strength is essential, research chemists, including the Petrocarbon-Erinoid-Styrene Products team, are trying to produce a modified polystyrene of higher impact strength; American polymer chemists have already made some progress in this direction.

Another aim of research is to produce a polystyrene with a higher softening temperature. The plastic would be useful for surgical and dental instruments owing to its water resistance, chemical inertness and cheapness, and the ability it shares with Perspex to "pipe" light, but as the ordinary form of polystyrene softens at 90° C., it cannot be sterilized. Styrene Products believe that this problem, also, is on the way to solution. It is possible to make polystyrene in gauges of film thickness, but not at a price which would make it competitive with cellulose film. Polystyrene films do, however, find a limited use at present in electrical apparatus.

Although it can be fabricated from the sheet for short production runs, and even blown on conventional glass-making plant, polystyrene is used primarily in granular or "moulding powder" form for injection moulding. This is the technique by which a "shot" of the plastic, made fluid by heat, is forced into a series of moulds connected to a central channel. A single moulding cycle averages from 20 to 45 seconds, according to the complexity of the moulding, and a high rate of production is thus obtainable.

American moulders gained their long start in the use of polystyrene



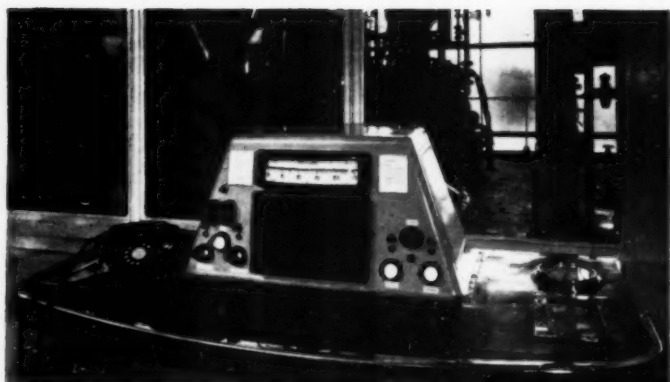
P. C. Chaumeton, managing director, Styrene Products, Ltd.

from the simultaneous development of injection moulding machinery and the rapid advance of chemical derivatives from petroleum. Production of the resin is a two-stage process in which benzene and ethylene are reacted to form monostyrene, and this monomer is then polymerized, or given a new molecular form conferring characteristic properties. Each stage requires a separate plant and the capital costs are high. The U.S. Government's synthetic rubber programme, however, had at the end of the war brought into existence plant capacity largely in excess of the synthetic rubber industry's needs of styrene at the level of production to which it was cut back after the war.

In theory, British coal is as good a basis as petroleum for monostyrene, for benzene is a coal-tar product and ethylene gas is also a coal constituent. But coal chemistry lags so far behind petroleum chemistry that in practice the development of polystyrene manufacture in this country had to await the creation of a petroleum chemicals industry. In the meantime, British injection moulders had to be content with less than 40 tons of polystyrene a week that the Board of Trade permitted to be imported from Canada and the U.S.A. Even this concession was intended only to prevent the British plastics industry from being at a hopeless disadvantage in international trade, not to supply the home market; it was a condition of the use of imported poly-

Part of the 4½ acre polystyrene plant of Styrene Products, Ltd.





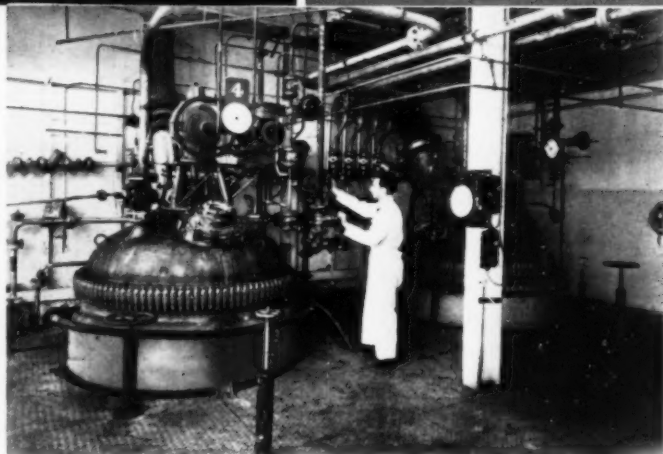
A control desk, with reactors in the background, at the Styrene Products' plant.

Below, part of the reactor room.

styrene that 90 per cent. of the mouldings should be exported.

Polystyrene manufacture, even now, is a jump ahead of the British petroleum chemicals programme. The three groups responsible for the resin's development decided to make a start with monomer imported from Canada, U.S.A. and Germany. Monsanto Chemicals will draw monostyrene eventually from the plant to be built at Grangemouth, Scotland, by Forth Chemicals, Ltd., a company owned jointly by Monsanto and British Petroleum Chemicals, Ltd., which, in turn, unites the interests in this field of the Distillers Co. and the Anglo-Iranian Oil Co. Styrene Products' source of supply of the monomer will be a plant forming part of the Petrochemicals' development scheme at the Partington Estate, but construction has not yet begun. In the meantime, at least one considerable German plant is exporting monomer, the Italian Montecatini chemical combine's plant is in production, and Canada is also exporting to Britain.

In order to realize the styrene project, Chaumeton could not confine himself to a role as financial negotiator and company promoter. The two known processes of polymerization were well tied up with patents, and, in any case, he shared the opinion of Dr. Kind that these procedures were capable of improvement. Instead of the usual methods of polymerizing the monomeric material in the form of an emulsion or a block, Styrene Products uses a system in which the material is converted into small beads, or "pearls," which is claimed to permit more efficient



heat treatment. The Petrocarbon group, which is responsible for chemical engineering design for all Petrochemicals' enterprises, undertook the development of the polymerization process, in conjunction with its originator, Professor W. P. Hohenstein, of Brooklyn Polytechnic Institute. The plant created by this collaboration is an outstanding example of the trend in the chemical industry towards continuous processing and labour-saving through elaborate instrumentation. It is fully automatic, and needs a staff of well under 100—operatives, commercial supernumeraries and technical supervisors. Since its rated output sells for more than £2,000,000 at the current price of 3s. 8d. a pound, the output per man-hour of this production unit must be among the highest in British industry.

While Erinoid were helping to promote the Styrene Products

scheme to ensure access to supplies of an important new material for injection moulding, they were developing a parallel policy in respect of their other, and at present major, starting material—cellulose acetate. From the action they have taken, it can be assumed that Erinoid are not inclined to alarmism about the extent to which polystyrene will cut into the market for cellulose acetate.

Erinoid buy cellulose acetate—and intend to continue buying it—from companies who make it primarily for their own use, or who have a tie-up with the plastics trade. In times of scarcity it is not to be expected that a rayon manufacturer will put his own factory on to short time so that he can make deliveries of acetate to trade customers; in a buyers' market, on the other hand, any price concession that a moulding powder firm may secure from an asso-

ciated acetate company is a powerful competitive advantage.

Price-cutting has always bedeviled the moulding industry, and as nine-tenths of the profit on acetate mouldings depends on the price at which the moulding powder was bought, there has always been a tendency for market pressure to force down moulding powder prices. Cellulose acetate moulding powder is 4s. 9d. a pound at present; compared with last year's price of 2s. 8d.

Erinoid's decision to get into the cellulose acetate business was taken to eliminate a possible competitive disadvantage, not to make themselves independent of the market. They will continue to buy from their suppliers, but some of their requirements, particularly of high-grade material, will be drawn from a new factory, the ownership of which they are to share with Nelson's Silk, Ltd., a subsidiary of James Nelson, Ltd., the Lancashire rayon firm, and the Hercules Powder Co., Ltd., the English subsidiary of the American firm of that name. From its base in the nitrocellulose, cotton linters, turpentine and rosin industry of the Southern States of U.S.A., Hercules branched out into general chemical manufacture, and are to-day one of the world's largest makers of cellulose acetate. One-third of the capital of Nelson's Acetate, Ltd., the joint company constructing the new British plant, will be contributed by each of the participating companies, and after Erinoid and Nelson have received their allocations of acetate flake the remainder will be distributed by Hercules Powder Co., Ltd.

Interesting Trend

Formation by non-competing companies of jointly-owned subsidiaries for specific production projects represents an interesting new trend in economic practice. The method has been widely used to establish a petroleum chemicals industry in this country, associating most of the petroleum refining and distributing organizations with leading chemical manufacturing groups. More recently, the sulphur shortage induced 11 large users of sulphuric acid to collaborate with Imperial Chemical Industries in forming the United Sulphuric Acid Corporation to manu-

facture the acid from anhydrite, after I.C.I., who own one of the world's three plants processing anhydrite for this purpose, had declared themselves unwilling to increase their production capacity in view of their colossal commitments for expansion in other directions.

New Ventures

Almost all these jointly owned companies have been set up to produce materials that are in short supply or completely unavailable in this country. That powerful, established companies should undertake these new ventures is creditable to their enterprise and shows that big business in this country has not lost its capacity for innovation. But it is a rather melancholy reflection on the eclipse of the independent entrepreneur and the breakdown of the old system by which industry was constantly being reinvigorated by the invasion of small companies pioneering new processes and marketing new products.

The times are out of joint for small men with limited capital, at any rate in highly technical industries like chemical manufacture. Many a chemist or businessman has, no doubt, foreseen the possibilities of profit in the production of polystyrene in this country, and some of them may have sound ideas about new processes for producing it, but courage and pertinacity alone would never have enabled him to realize his ambition. He would require a sheaf of Government permits, all interdependent on his success in obtaining the others—permission to raise capital, permission to import starting materials, permission to build, permission to use constructional steel and "critical" metals. His chance of obtaining delivery of chemical plant and control instruments within a reasonable period of years would be problematical, and there is, unfortunately, less doubt about his prospects of raising half a million pounds from private and institutional investors in the absence of backing from well-known chemical companies. All his difficulties of raising money, negotiating contracts, and showing results that would keep his backers happy during the pilot plant stage would be

increased by the maddening delays in plant delivery.

The jointly owned *ad hoc* subsidiary company is a device for overcoming these present difficulties. The resources of the parent companies take care of initial costs, and their standing sponsors any public issue of shares. The support of Government departments for the project is more easily obtained, partly through the prestige of great names, and partly because the parent companies have in all probability established export organizations.

The preference for jointly owned to wholly owned subsidiaries, no doubt, reflects financial caution and the absence of the competitive pressure that might, in other circumstances, promote horizontal amalgamations, rather than this special form of vertical organization in which the linked units retain their autonomy. Usually these joint projects involve the union of two distinct kinds of technological expertise, which are both necessary for the exploitation of a novel form of manufacture, or, alternatively, one sponsor contributes "know-how" and the other an assured market for the product.

Will it Survive?

Is the joint subsidiary a form of company organization that can survive a return to competitive conditions? Its board of directors inevitably consists of nominees from the parent companies' boards, whose main interests are elsewhere. Its management has few opportunities to develop independence in policy making. Strains may arise in the organization if other sources of supply for its product become adequate, and the parent companies are able to buy more cheaply on the open market.

Joint control may prove in some instances to be a temporary expedient; a breakaway to an independent existence or continuance as a division of one of the parent companies may be a status more appropriate to competitive selling. In any event, jointly-owned subsidiaries will have justified themselves by mobilizing research and finance for projects that strengthen the country's economy at a time when industrial adventure is discouraged by so many obstacles.

BUSINESS CALLING

News and



C. O. STANLEY, O.B.E.

Chairman, Pye, Ltd.

IT is in the field of radio that we have the really big opportunity of improving our communications, but unless something is done quickly to change the outlook of the G.P.O., we shall find ourselves a long way behind other countries.

It is common knowledge that for the last 30 years there has been considerable foreign influence on the outlook and standards of the G.P.O.; in fact, a great deal of British telephone work has been copied from other countries.

The G.P.O. is a monopoly and in its dealings with its suppliers it uses the most objectionably monopolistic methods.

We question whether the G.P.O. are serving the best interests of the nation in all the actions they are taking with regard to radio communications and it is now clear that either your company or some other company must challenge these actions.



P. LINDSAY, O.B.E., M.C.

Chairman, Morgan Crucible Co., Ltd.

IF wages and raw materials of industry rise in terms of money, profits must increase also in terms of money; they are certainly not rising in terms of purchasing power. Higher costs, especially if accompanied by a growth in sales, require the employment of a greater volume of money. Where is that to come from—apart from profits? That source, alas, is so seriously eroded by taxation as to leave an insufficient portion of even "high" industrial profits to meet the need to maintain the vigour and feed the growth of industry.

It is true that the prevailing growth of money profits is a secondary symptom of the "ill wind" of inflation; primary symptoms are soaring prices of commodities, services and wages. These symptoms must not be confused with the cause. We in industry are even less able to mitigate the chief cause—a shortage of commodities in relation to demand and the fact that British buyers have to pay a premium price.



SIR ROBERT RENWICK, Bt., K.B.E.

Chairman, Petrochemicals, Ltd.

LOOKING back there is no doubt that the work of planning, building and bringing into production, all in one great operation, some 17 plants, of which several are of completely novel design, is an outstanding technical achievement of which all those who have been connected with the project may be proud. It must not be forgotten that the construction has been carried through during a period of material shortages involving long delivery dates and the delays which have been experienced are by no means peculiar to this company.

The difficulties of shaping a sales policy and building up a sales organization for a newcomer into the chemical field should also be appreciated, particularly in view of the delays which have been experienced in obtaining salable products from the plant. Moreover, many of our products are chemicals new to commercial uses and therefore require the opening up of fresh markets.

views of business men

ASHLEY S. WARD

Chairman, The Park Gate Iron and Steel Co., Ltd.

FOR the fourth year in succession we have obtained record outputs. In achieving these results there has been no increase in the steel-making or rolling mill capacity. The succession of records is due to three main causes, namely:—

Improvements in the technical equipment.

Technical improvements in procedure.

Good relations between the operatives and the management.

The mere statement of these things does not convey the full extent of the constructive thought and planning which has made the present record outputs a reality. Not many years ago an output of 5,000 tons of steel ingots weekly was considered a very good performance, yet with the same number of furnaces we have attained over a full year an average weekly output of 6,400 tons, with a single week's record of 7,544 tons. A similar story can be told of the rolling mills.



EDGAR E. LAWLEY

Chairman and Managing Director, The Lawley Group, Ltd.

IT is pitiable that the very small quantity of coloured ware which becomes available for sale on the home market is restricted to export rejects.

I would again complain that the British housewife is restricted to white ware, and again stress the point that no hardship or irregularity of any kind should in any way arise if manufacturers were allowed to supply self-coloured and hand-painted table ware to the home trade. I would also make the point that many advantages would flow if some scheme were to be worked out to permit the services of trainees being utilized on hand-painted work which could be available for sale at home.

When thinking of the unnecessary restriction to white ware for the home market, I should make reference to the fact that its production under the present controls has left no margin of profit to the manufacturer.



W. H. HIGGINBOTHOM, F.S.A., F.S.S.

Chairman, Edgar Allen and Co., Ltd.

A ROUGH calculation I have made shows that by reducing our prices overall by 5 per cent. (and provided our suppliers had obliged us by doing likewise) and by increasing wages by £1 per head per week—a very familiar and popular figure—our net revenue would last year have been reduced by some £200,000 to £269,244; the Exchequer would have received about £100,000 less in taxation (unless the rate thereof had been raised) and the value of our exports, direct and indirect, would also have fallen by 5 per cent. Taking these results as applying to industry in general, what would have been their effect on the national economy? The fall in value of exports would have increased the already very grave trade deficit; the additional purchasing power released in the form of higher wages would, by its impact on a home market depleted of goods by increased exports, have, either or both, forced up home prices or led inevitably to more stringent controls and rationing.





A farmer's boy who came to London in 1902 with £30 capital, F. T. Jackson, joint managing director of Telephone Rentals, Ltd., has built up a £1,000,000 a year business by picking the right men to run it—and keeping them. Over 55 employees of the firm have completed more than 14 years' service each. Here is the story of a man in a new industry who can command loyalty as well as any of the tradition-hallowed businesses in older fields.

From Speaking Tube to Time Control

By A. K. ASTBURY

IT is not a very unusual thing in business for a man to rise to great heights from small beginnings. And it is not that alone which makes the career of Mr. Frederick Thomas Jackson, founder, chairman and joint managing director of £1,500,000-a-year Telephone Rentals, Ltd., outstanding in the world of industry and commerce. It is that Mr. Jackson started life literally as a farmer's boy, born in Worcestershire of generations of farmers; and seeking his fortune in London with no prospects, no technical training and negligible capital, rose to the top of one of the most complex and technical of modern industries—that of telecommunications.

It would be fanciful to say that Mr. Jackson founded Telephone Rentals, Ltd., and its sister company, the Telephone Manufacturing Co., Ltd., on the products of trapping rabbits and selling cider on his father's farm. Yet it was by these methods that this modern Dick Whittington, half a century ago, earned the £30 which in 1902 carried him, on a single ticket, to London and final success in the world of industry.

F. T. Jackson still suggests the countryman in spite of a lifetime in London. To meet him in the simply furnished boardroom of

Telephone Rentals is to meet a man of quiet dignity and obvious purpose, whose pleasant, unhurried voice still carries with it a suggestion of the speech of his home county of Worcestershire. He admits that he had at one time considered returning there to farm, "but I shall never do that now," he adds.

F. T. Jackson was born near Stourport and educated at Bewdley Grammar School. He came of a long line of farmers, but he realized that there was, at that time, "nothing in farming but worry," and he decided to try his fortune in London.

His first introduction into the world of business was in the telephone industry, which later became his life work. He was a clerk with the New System Private Telephone Co., the first company to introduce private internal telephones on a rental basis. After a time he went to work for another company—I.T.C., Ltd.—which imported telephone equipment from Germany, and it was not long before the German manufacturers arranged for Jackson to represent their British interests personally, and to carry out, on their behalf, large-scale expansion throughout the British Isles. New companies were set up in Birmingham, Glasgow, Leeds, Belfast and Dublin.



New H.Q. of the South London of branch Telephone Rentals.

and it was not long, too, before F.T.'s new company bought out his old employers, the New System Private Telephone Co.

The outbreak of war in 1914 seemed to make Jackson's position hopeless, since his companies were dependent on German suppliers, and the shares of I.T.C. and its subsidiaries were vested in the Public Trustee. But he reacted promptly to the situation. He formed a new organization, the



Joint Managing Directors of Telephone Rentals, Ltd., Mr. W. S. Philcox and Mr. F. T. Jackson.

Telephone Manufacturing Co., to produce the equipment he could no longer obtain from Germany; bid for, and obtained, the shares vested in the Public Trustee, and, through the American Embassy, secured a writ on his German suppliers cancelling all contracts. Workshops were set up at Dulwich in London, and the equipment produced there was used to supply the existing telephone renting companies throughout Britain and Ireland.

The manufacturing and renting companies expanded throughout the war, and in 1920 the Telephone Manufacturing Co. capital was increased to £100,000. All the shares in the rental companies were bought and five new companies set up at Bristol, Cardiff, Liverpool, Sheffield and Newcastle. Separate companies were also founded in Paris and Brussels and in Australia, and a new factory was set up by F.T. at Dulwich to replace the original workshops of the London Telephone Co.

By the end of 1922 it was clear that the Dulwich factory had a potential output even greater than the growing rental companies could absorb; the factory had, indeed, doubled its production within a few years. New markets

were sought, and it was at this period that the company became contractors to the Post Office, now one of its biggest customers.

Although F.T. lives in the country at Ide Hill, in Kent, he has a flat near the company's factory at Dulwich so that he may visit the works daily at eight o'clock for a tour of inspection and talk with his works director, chief engineer and assistant managing director. It was in the same factory during the second World War that some two or three thousand "secrophones" were manufactured, for use on secret telephone conversations by Mr. Churchill, his Cabinet Ministers and all Air Force commands.

F.T. believes that his success is very largely due to his ability to choose the right people. "I believe that I have a certain amount of what, in women, is called intuition; and I believe," he added, "that you can tell what character a man has by looking in his face."

"I have a theory I put into practice quite a lot," he said. "If ever I have a position I want to fill, I look round first among my own people, and, wherever possible, get someone already on our staff and just pitchfork him into the job. I

believe, you see, that if he has got anything in him at all that will bring out his initiative. I am referring, of course, to administrative and not technical jobs."

"I don't think I have made any mistakes in that direction. I did make one mistake years and years ago, but that was in over-trading. I have never made a mistake yet in judging men."

Such a decision was made in 1923 when F.T. appointed Mr. W. S. Philcox, who had joined the company in 1922, to concentrate on the management of the rental companies.

Mr. Philcox told him he was going to leave the firm, but by the end of the interview F.T. had appointed him general manager of the rental side of the business. "Philcox had, and still has," says Mr. Jackson, "one outstanding ability—that he can get down to detail to a much greater degree than most businessmen; and this rental business is one where details count. He stayed and is now joint managing director with me and vice-chairman, and, incidentally, does most of the work!"

Mr. W. S. Philcox, an Old Alleynian, spent the latter years of the first World War in the Royal



How They Keep Their Employees

1. Salaries and commissions are good.
2. Executive positions are filled from within—and promotion of a good man is rapid.
3. A pension scheme provides a 30 per cent. minimum of salary received at 55 as basic minimum, with up to 30 per cent. additional for long service.
4. Widow receives equivalent of a year's pensionable salary if employee dies in service before 65.
5. Employees share profits quid pro quo with shareholders, with additional bonus for long service.

Flying Corps and was awarded the D.F.C. In 1919 he went to Caius College, Cambridge, and took an engineering degree. During his first years in Mr. Jackson's organization he went on special missions to Australia and the United States on behalf of the rental companies, and by 1929 had completed his period of initiation and consolidation.

By 1929 both factory and rental companies were ripe for considerable expansion, and F.T. agreed that the time had come to separate their activities so each might concentrate on its own individual markets. The original Telephone Manufacturing Co., Ltd., therefore separated into two organizations, each operating individually, but each having the same board of directors to preserve the continuity of policy for which Jackson as chairman and managing director had been primarily responsible. Telephone Rentals, Ltd., was therefore formed with a capital of £600,000 to take over all the rental companies, and the new Telephone Manufacturing Co., Ltd., was capitalized at £250,000.

The progress made by the two companies since 1929 has more than justified the decision to separate their activities, with an annual rental from subscribers of £167,000 in the first year of its existence. Telephone Rentals had

by 1939 increased this to £380,000, and by 1943 to £570,000; now no less than £1,500,000 a year is subscribed to this organization by representatives of all sections of British industry, commercial firms and professional bodies.

The progress which Telephone Rentals, Ltd., in particular, has made since 1929 has been as a result of the efforts of Mr. W. S. Philcox. To him has been largely due, too, the introduction of the present pension and profit-sharing

schemes, and much of the company's social and welfare activities.

Telephone Rentals now serves over 20,000 subscribers, for whom it has installed vast quantities of equipment, supplied an efficient maintenance service, and assisted every subscriber to separate productive from unproductive time, and to make greater use of actual production time.

From its headquarters at Kent House, Knightsbridge, London, it operates through 15 branches in Britain and Ireland and their subsidiary companies in Paris, Brussels, Johannesburg and Cape Town.

But during F.T.'s half-century in London technical improvements have more than kept pace with business developments.

"We now offer a service which is, in fact, a highly specialized branch of business consultancy. Our representatives are men of broad business experience who have been specially schooled so that they are qualified to advise on the ways and means of making the most advantageous use of time; they may well be called 'doctors of industry'—industry has a recurrent time problem which our men can diagnose and remedy. Our business has succeeded because we have been keen to listen to management's problems, and have been able to provide an answer which is specifically related to the business we are investigating."



Details of the revised pension scheme were graphically explained to the staff in their house organ.



Staff at home and overseas keep in touch through the "T. R. Journal."

Although all the complex items of equipment which are used for internal telephones, staff location, internal broadcasting, time control, attendance and job time recording, and subsidiary activities are of course important, it is the pains taken in the application of this equipment to the T.R. ideals that are, in the end, of the most benefit to subscribers. Added to this is the all-important maintenance organization, which provides a high standard of service.

Telephone Rentals provides management with the tools which enable them to obtain time records quickly and simply—attendance time, machine time, job time and process time—which, by their translation through costing into effective managerial action, become of prime importance to management. By this method unproductive time can be quickly traced and allocated to its correct account.

Saving Time

Side by side with these more recent developments offered by Telephone Rentals, Ltd., the telephone plays its part in saving production time. Internal telephones, by which instant contact may be made with any person on the premises wherever they may be, without the aid of a switchboard operator, are provided in a range suitable for use in small professional offices, as well as the largest industrial and commercial undertakings in the country. Through loud-speaking master stations, individuals may be contacted by the flick of a key, incoming calls may be filtered, priority obtained, and conferences held. It is another example of the effective use of time.

Allied to this is the T.R. application of internal broadcasting, which can be used not only for reaching members of the staff, but also for broadcasting speech, music or signals.

By adopting the use of broadcast signals to govern break periods, less production time is lost at this admittedly difficult change-over period. The broadcasting of music, especially in these days of rearmament, part-time and female labour, must once again play an important part in the overall increase in industrial output. The rental system used by T.R. allows

for the expansion, contraction or redeployment of speakers as may be necessary as the lay-out of machinery and even the type of work undertaken on such machines vary with the work in hand.

In these troubled times it is generally agreed that the more workers know about management problems, the easier will be the task of management. Wall newspapers, notice boards, canteen speeches and so on, all play their important part, but with T.R. internal broadcasting it becomes possible for the voice of the managing director or other executive to be relayed to all workers wherever they may be within the premises, without the necessity of taking them away from their place of work. Every far-sighted industrialist realizes that human contact with his employees is essential, and internal broadcasting has proved time and time again an essential bridge in management-worker relations.

Each section of T.R. service—internal telephones, internal broadcasting, or time control—may be installed independently. But the physical linking of the various combinations available avoids duplication of equipment, and when all three are installed they become known as T.R. Composite Service.

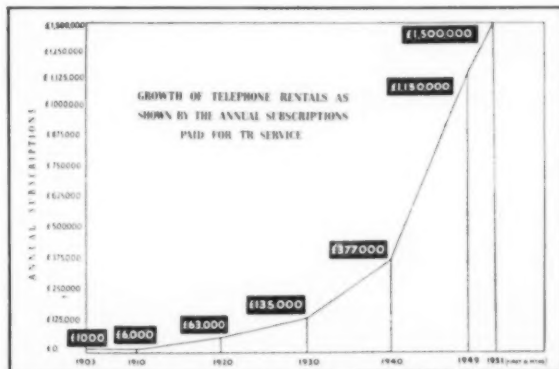
Jackson is particularly proud of the long records of service which are customary at Telephone Rentals. One entire wall of the boardroom is taken up by a board on which are inscribed the names of over 266 members of the staff who have completed 14 years' service with the company. The first name on the board is that of Frederick Jackson.

There is a carefully graded system of awards for long service. After 14 years an employee's name is entered on the Roll of Service board. After an additional seven years' service a star is placed alongside his name. Other stars are added after 14 and 21 years. Jackson himself holds pride of place as a four-star man.

Allied to this, each employee is presented with a pin or brooch upon entering into the Profits Participation Scheme at the end of three years' service. This pin is replaced with others after intervals of seven, 14 and 21 years, each carrying one, two or three stars.

"I think there are three reasons why we keep our people," he said. "They are our terms of employment, our pensions, and our profits sharing schemes. The pensions scheme provides 30 per cent. of the salary received at 55 as a basic pension, and up to 30 per cent. of that salary is added for long service. The employee is also covered by life assurance for a sum equal to a year's pensionable salary, if he dies before reaching the retirement age of 65. The employee's contribution covers half his basic pension, subject to a maximum of 5 per cent., the company paying the rest.

"Employees, too," he added, "can participate in a profits sharing scheme after three years with the company; they then receive the same rate per cent. as that paid in dividend to the ordinary shareholders on a sum decided by the salary they receive, with the addition of 5 per cent. for every three years' employment with the company."



Radar Speeds the Office Messenger

By JULIAN ACOMB

Pneumatic tube systems for transmitting documents have served the office manager well for many years. But the best of ideas is capable of improvement, and a new system, using an acoustic radar device, gives automatic control of destination on a single loop circuit, which costs less to install and run.



THE use of pneumatic tube systems for the transport of cash, documents and small objects from one part of a building to another has been well established in the last 40 years. To-day the only factor preventing a further expansion of their use is economic. Clerical labour, and particularly that of the messenger type, is getting scarcer and more expensive, and the demand for the rapid transit of documents more urgent.

A new system eliminates a very considerable proportion of the piping normally associated with pneumatic tubes, and, as a result, reduces the power consumption necessary to maintain the pressure of air within the system. The network of pipes connecting different stations is replaced by a single circuit, with short branches at each receiving-sending outlet.

A prototype installation of the new system has recently been installed at the Teddington, Middlesex, works of J. Jeffreys and Co., Ltd., engineers, and this is illustrated in the photographs published here.

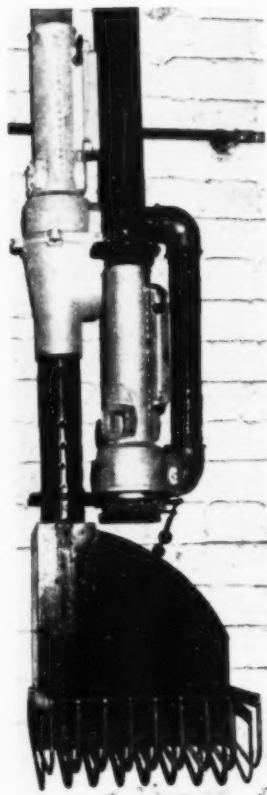
In place of the network of tubes connecting individual sending points with each other, a single tube winds unobtrusively round the factory at ceiling level. There

are three combined sending-receiving points—in the office, the store and factory—in this installation, but in practice as many as 36 stations can be connected to a single circuit. Moreover, by the use of junction boxes to connect two contiguous circuits, an infinite number of stations can be interconnected in multiples of 36, and messages can be carried over considerable distances, from one building, for instance, to another. This is obviously important to-day, when many expanding businesses cannot rebuild, but must use existing buildings scattered over a considerable area.

Each station is connected by a short Y-shaped branch to the main circuit; the two junctions being provided with gates controlled by an electronic relay actuated by the container itself during its passage through the circuit. The positioning of these gates determines whether a container in transit shall be by-passed for delivery to a station, or continue *en route* through the system.

The method of controlling the route that the containers take is simple, ingenious and practically

A sending-receiving station of the new system (right), and the container (above), showing the special sound head that directs its course.



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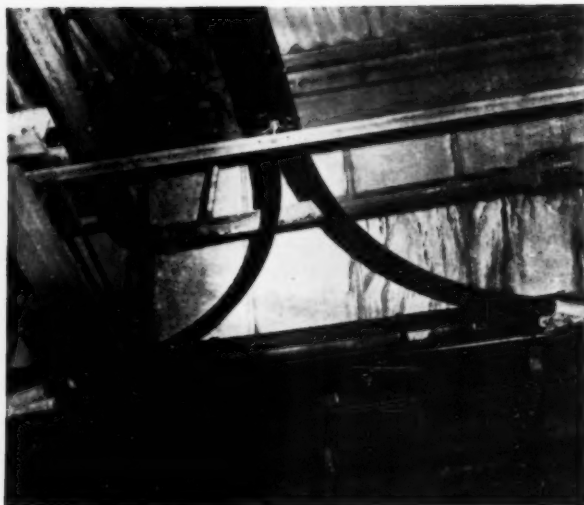


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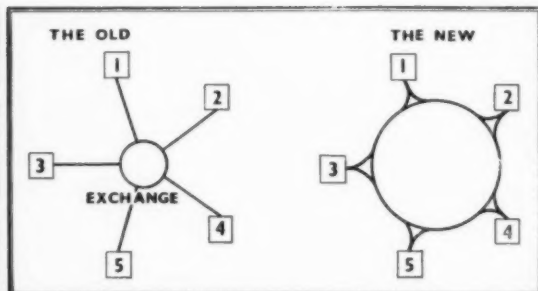
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A single pipe with Y junctions acts as an "inner circle" and saves pipework installation.



foolproof. The containers are standard metal cylinders, provided with a cushioned cap at one end, and a cushioned sound head of similar dimensions at the other. This sound head contains 12 small holes bored to critical dimensions parallel to the main axis of the cylinder. The holes are provided with lids that can be opened or closed by the flick of a finger. Each hole has a key symbol, and each station is given a symbol corresponding to a hole or combination of holes in the container.

The container is loaded with the material to be transmitted, and the lids of the number or numbers corresponding to the station to which it is to go are left open, the remainder being closed. It is then inserted into a sending box of standard pattern in the pneumatic tube. The closing of the trap door automatically diverts air pressure from the main tube to the loop, and (if traffic conditions are favourable) blows the container into the main system and along the tube towards its destination at a speed of 25ft. per second.

At the same time a certain amount of the air is forced through the hole or holes that have been left open. These are designed so that they act as the reeds of a wind instrument, and the passage of the air through them emits a musical note of known frequency, each hole, of course, having a different frequency and pitch. As the container progresses inside the tube,

a microphone at each station picks up the note or notes that it is emitting. The microphone is connected to an electronic instrument that may best be described as a wireless set capable of receiving a very limited band of frequencies, covering only a single musical note.

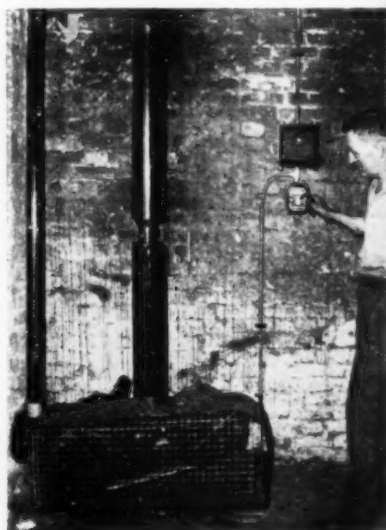
If the approaching container is emitting a note outside the range covered by the electronic apparatus, nothing happens and the container continues its transit of the main tube undisturbed. If, however, the note emitted by the container is identical with that to which the electronic apparatus is constructed, a relay operates a solenoid valve that opens the gate. This diverts the container to the delivery point at the station. After its contents are removed, it can, by a simple manipulation of the lids of the holes, be sent back to any other station on the circuit.

If two containers are travelling through the system simultaneously, with one following closely behind the other, the second might follow the first to a station to which it was not intended to go, as the gate would not have had time to close after the passage of the first. To avoid this, the system incorporates a spacing device at one or more points in the circuit. The passage of a container past this point breaks an electrical circuit which actuates an arm that holds up any following containers for a fixed period of

time, the actual duration depending on the size of the circuit and the distance between stations. Similarly, the initial starting of a container after loading is delayed for a few seconds if any of the diverting gates are open at that instant. All possibility of delivery to a wrong address is thus obviated.

The reduction in the amount of piping involved will obviously reduce installation costs; since the cubic capacity of the system is correspondingly reduced, the amount of compressed air, and of the power needed to provide this, will also be reduced. The prototype at Teddington is operated on a 5 h.p. power unit, and it is claimed that this unit would cope satisfactorily with a full 36-station circuit.

A 5 h.p. electric motor provides sufficient power for a 36-station circuit.





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Batched order forms are aligned on a peg board and summarized with the aid of a calculator.

This Firm Takes Stock —Every Day

By BRIAN CUMMINGS

Judging from the experience of Gallaher, Ltd., the large firm of tobacco manufacturers, the peg board is an item of office equipment that is too often overlooked. It helps them with their market research, and enables them to take stock every day.

TOBACCO finds a good many manifestations in the community. For generations it has been turned into cigars, cigarettes, chewing and smoking tobacco, and snuff; and in the last few decades it has been sold in a very wide range of packs and prices.

Nowadays, tobacco is bought by men and women in all walks of life. But whether they are bankers or bookies, all these people want the leaf in *their* quality at *their* price. Local and social traditions may influence the trade just as much as the cost of living, or the latest imposition of the Chancellor of the Exchequer.

There are here two factors—the large number of line-items, and the complexity of the market—which create special problems for the tobacco manufacturer, who must be able to calculate demand to a nicety and meet it without loss of time. And whereas it is clear that sailors' shag will not do very well in Mayfair, local preju-

dices in Wales or Westmorland concerning brand names or prices may be less than obvious and, indeed, quite difficult to assess.

Gallaher, Ltd., who are among the largest tobacco manufacturers in this country, have found an office method which goes a very long way towards solving these problems. The method enables them to produce analyses of line-items sold by branch, traveller and ground—not once a week or once a month, but once a day! More than that, it helps to bring about a daily physical check of all stock in all warehouses—a rare achievement.

Not the least attractive feature of the method is its essential simplicity, for it depends on that relatively unexploited instrument, the peg board. A standard order form, pre-printed with all the company's line-items, is used throughout the organization. The top of the form bears the name, address and folio number of the customer,

this information being printed by address plates.

At the week-end each traveller receives one set of forms for every working day of the forthcoming week. When he calls on a customer, his work of entering up is limited to writing one figure (the quantity) against each line ordered. In the evening the traveller posts the forms to his branch office.

A credit control clerk checks the order forms; if the accounts are in order, he then passes the orders to an allocation clerk.

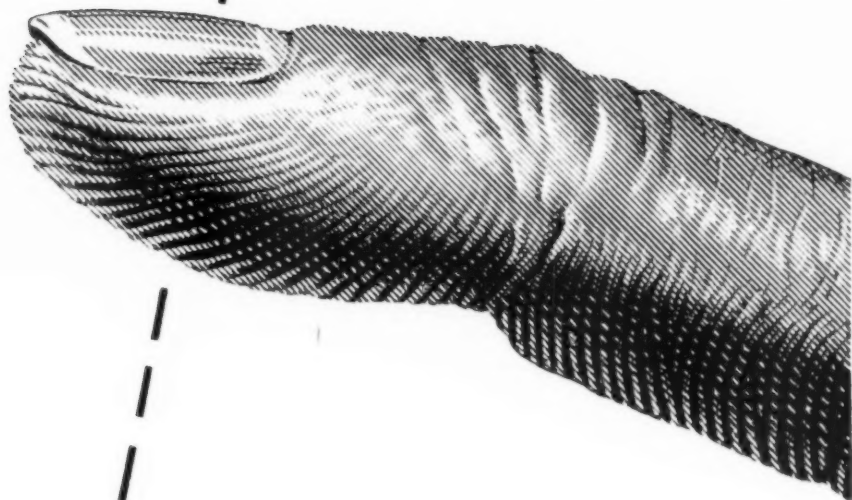
The first job of the allocation clerk is to make sure that the customers' orders fall within their quotas. (Gallaher's are still obliged to ration their customers.) After that, she puts each traveller's order forms into batches. Each batch is then given a slip showing the batch number, the traveller's ledger number, invoice numbers, and the date.

After this, the batch is taken over by a price extension clerk, who calculates the money value of each line on each order, and the total value of each order. Most of this work is done by mental arithmetic, though machines are available for dealing with long orders and orders involving awkward quantities.

Still! batched, the orders now pass to another operator, who sits in front of a calculating machine and a peg board. When the forms are laid side by side on the board, only the figures representing the weight of each line-item ordered are visible to the operator. With the aid of a cursor, it is therefore relatively easy for her to cross-total the weight of each line-item ordered in the batch, and enter this figure on the top sheet, which is a summary for the batch.

When these lines have been cross-totalled the forms are folded down the middle—a job made easy by light perforations. The effect of the fold is to line up the quantity columns of the remaining line-items, which are listed on the right hand halves of the forms. Once these lines have been extended, the calculations are complete.

The summary sheet now shows the total weight sold for each line-



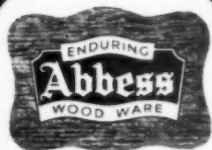
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helps organisations large and small to obtain bigger dividends from their
investment in manpower. A phone call or postcard will bring you
details of the ways in which an individually engineered Dictograph System can
save your time. Incidentally, the specially designed, long-life batteries
employed on the Dictograph System ensure continued service during power cuts.*



DICTOGRAPH TELEPHONES LIMITED

Originators of loudspeaking telephones

CHIEF SALES OFFICE: 200 ABBEY HOUSE, VICTORIA STREET, SW1 - ABBEY 5372 - BRANCHES THROUGHOUT THE COUNTRY
INTERNAL TELEPHONES - STAFF LOCATION - INDUSTRIAL MUSIC BROADCAST - MASTER CLOCK CONTROLLED TIME SYSTEMS



THE NAME ON YOUR DESK...

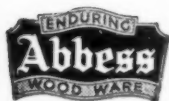


... means a lot to you

Behind the "Abbess" symbol there is over 75 years' experience in furniture making. Sound construction and the use of carefully selected timbers, scientifically treated to withstand varying office temperatures, ensure long and satisfactory service.

The model 5236 illustrated above is the Typist Desk, Size 42 ins. by 24 ins. by 27 ins. high, fitted with 3 standard drawers and pull-out slide with "Abbess" insert tray.

Ask your local distributor for particulars, or write to :



ABBOTT BROS. (SOUTHALL)

MAKERS OF FINE OFFICE FURNITURE

ABBESS WORKS, SOUTHALL, MIDDLESEX

Tel : Southall 1357

There's nothing like **WOOD**

NEW for your OFFICE

Controlling Watchmen

SECURITY measures on premises where a watchman is employed, to be fully effective, must ensure that rounds are made



This unit controls and records watchmen's movements.

at irregular intervals at times unknown to anyone. A new **TR Watchman Control** system automatically decides tour times, so that even the watchman is unaware of his exact schedule.

When a round is due, a buzzer sounds a warning and an indicator lamp lights. The watchman must then walk round to check points throughout the premises and operate a switch at each. When he returns to the control unit and operates another switch, the lamp is extinguished and the tour number records automatically. If he missed a check point the lamp will remain on, and he must revisit each point, otherwise the alarm will sound.

— The alarm—a loud bell or signals in the watchman's room, an employee's house, or the police station—will also sound if the watchman is attacked and cannot

complete his tour, if the wires are cut, or if the button at any check point is pressed.

The system is made up of a control unit in the watchman's room, any number of check points, and a "Chronogram" device for determining the programme of tours. The whole equipment operates independently of the mains—important in these days of power cuts.

—(Enquiry Ref. No. 11/06.)

Compact and Versatile

AN almost infinite variety of control, progress, production and sales charts is available to the office that installs a **Movigraph** chart system. The charts are built up of perforated composition panels, and the letters, numbers, signals, etc., are of moulded plastic in a variety of sizes and colours.

Each character has a peg or pegs fixed behind it, and these are

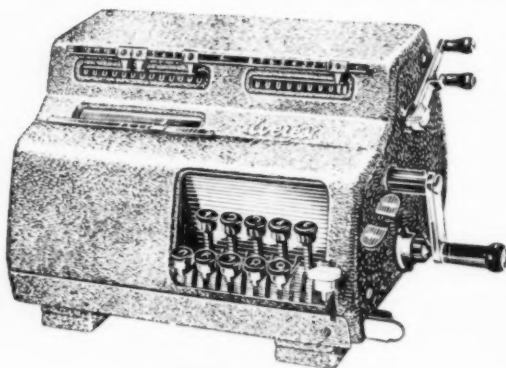


The Movigraph records sales...

**ADD, SUBTRACT,
MULTIPLY, DIVIDE,
WITH THE**

Everest
CALCULATOR

- 10 SETTING KEYS
- SINGLE HAND OPERATION
- INTERNAL CARRIAGE
- 13 COLUMN CAPACITY



IMMEDIATE DELIVERY

Write for Illustrated leaflets to

T. S. (OFFICE EQUIPMENT) Ltd

30 New Bridge Street, London, E.C.4. Phone: CITY 1107-9

Everest

TYPEWRITERS

(Standard and Portable)

THE NEW 1951 MODEL

- KEY SET TABULATOR FOR INVOICING.
- HALF LINE SPACING.
- INTERCHANGEABLE CARRIAGE.
- LIGHT & RESPONSIVE TOUCH.

A one handed operation



and there's an element of uncertainty about it—but there's no uncertainty about the time record made on an

INTERNATIONAL SUPERELECTRIC TIME RECORDER

*This also
is a
one handed
operation*

producing an accurate record agreeing with the time-figures shown on the front of Recorder.



Overall size, 16½" x 14½" x 9½"

For further details of this modern Attendance Time Recorder—now manufactured in England—send for free descriptive folder 509/2 and ask for details of our Profit Sharing Rental Terms.

INTERNATIONAL TIME RECORDING CO. LTD.

8, BERKELEY SQUARE, PICCADILLY, LONDON, W.1 - - - Mayfair 2004

and at Birmingham, Manchester, Leeds and Glasgow.

HEAD OFFICES—INTERNATIONAL WORKS, BEAVER LANE, HAMMERSMITH, LONDON, W.9.

AND NOW!

**THE
SIMPLEX**

FRANKOPOST OFFERS AN
OUTSTANDING NEW DESK
MODEL!



SIMPLEX - Eliminates
Postage Stamps and the
Post Book.

SIMPLEX - Prints all
values up to 6½" in
ONE impression.

SIMPLEX - gives auto-
matic accountability by
two meter readings.

SIMPLEX - prints YOUR
Advertisement or "Return
Address."

SIMPLEX - can be justified
by a mail of 10-20 letters
per day.

*The Small Mailer's
Postal Franker*

Details from

UNIVERSAL POSTAL FRANKERS LTD

90 REGENT STREET, LONDON, W.1

REGENT 2249

NOVEMBER, 1951

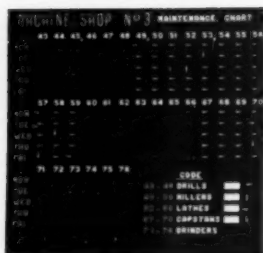
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"FRANKOPOST"
MODELS

MULTI-VALUE

(Hand or Electrically operated)
Prints up to 29/11d or lesser maximum
for Inland Letters—Parcels and Airmail

PITNEY-BOWES

(Electrically operated)
High Speed Franking and
Sealing Machines



... or gives flexible control of production and maintenance.

pressed into the perforations in the composition panelling. They will not drop out, even if the panel is turned upside down, and the special flags can be turned to different positions without removing them.

The base panels are in two sizes: 11½ ins. by 23 ins., or 23 ins. square. There are over 4,000 signal positions on the small panel, and twice as many on the larger one. Any number of panels can be joined up to give even larger numbers of positions. Signals are made in 12 colours, and various types of signal can be used to show over 100 different operations.

Code slips to identify the signals are typed and held in the title frames provided.

Letters and figures are obtainable in several sizes, and plastic-covered dividing rods are used for column rules.

An unusual feature of the system is that it can be used for graphs. Special slotted pegs are used to support elastic cord stretched from point to point. Different coloured cords allow more than one graph to be plotted on common axes.

Divided trays can be provided to hold the letters and signals.

—(Enquiry Ref. No. 11/05.)

Lift-Out File Drawers

A FILING cabinet that is convenient for storing documents, keeps them clean, and can be locked for security, combined with drawers that lift out and instantly become desk-top personal files, comprises the new *Model 8* filing system.

The cabinets are made in eight-drawer units. Quarto or foolscap suspension files can be fitted in the drawers without any adjustment; no special chassis are needed. A hardboard base and steel pressure plates are provided for use with folders.

Identification labels on the drawers and frames ensure that when several drawers are removed they can be returned instantly to their correct places. Each drawer is fitted with rubber feet to prevent desk tops being scratched.

Total capacity of an eight-drawer unit is approximately 500 files. The cabinet measures 17 ins.



The drawers of this cabinet lift out for desk-top use.

Twinlock Wages Systems help Employee and Employer. Employees receive in their pay packets replicas of calculations from which net wages are computed. Queries are settled immediately. Employees produce their essential Wage Records at one writing—saving time and eliminating risk of copying errors.

Illustrated folder gladly sent on request.

Twinlock

3-1 WAGES SYSTEM

PERCY JONES (TWINLOCK) LTD. 37 CHANCERY LANE, LONDON, W.C.2.

Telephone: MA 8971

Built for the boss

Here's the chair designed for the man at the helm—



The KE Chair

EARLY DELIVERY

Finger-Tip Control Dignified Comfort

The user can adjust the back-rest in seconds both vertically and horizontally — by means of the simple Leabank mechanism: Seat height adjustment quickly effected by rotating seat.

Foam rubber cushioning — tailored bedford cord covering — clean metallic grey enamel — all combine to make a handsome chair that will look right and feel right.

LEABANK WORKCHAIRS

Details of full range of Leabank Workchairs — for office and factory — from your local dealer or direct from:

LEABANK CHAIRS LTD.,

19 CLIFTON HOUSE,
EUSTON ROAD, LONDON, N.W.1



NOVEMBER, 1951



with *my* duplicating

"He has every reason to be! Every copy is perfect — no waste of time or paper. And how clean and simple with automatic selective inking!"

"Of course my Gestetner deserves most of the credit really—it almost works itself—I'm certainly glad we wrote for that demonstration."

This is the Gestetner Model 160 Express with the famous automatic inking system. Thousands of these duplicators are in use throughout the world.



Please write to Personal Contacts Manager for details of this and other models.



The World's Leading Duplicator Specialists

GESTETNER LTD.,

Aldwych House, London, W.C.2.

Holborn 8700

by 37ins. wide by 46ins. high. It is finished in two Polychromatic colours, various combinations being available. A useful feature of the cabinets is that they are designed to fold completely flat for ease of transportation.

—(Enquiry Ref. No. 11/04.)

Mechanical Enveloping

A MACHINE that will do much to eliminate bottle-necks and last-minute rushes in despatch departments is the *Craig Kemp* magazine enveloper.



Magazines, catalogues, printed matter, and even books of any thickness and up to 9ins. wide by 11ins. deep, can be fed into envelopes at the rate of 2,000 an hour.

The magazines or other material and envelopes (of any standard type) are stacked in hoppers in the machine. A jet of air blows the envelope open and a mechanical hand pushes the magazine home. A sealing machine can be coupled to the enveloper to seal the flaps, or—if printed paper rate is required—envelopes with the flaps ready tucked in are stacked in the hopper, and the magazines are fed through the bottoms, which are then stuck down.

The envelope and magazine hoppers are reloaded without stopping the machine, and guides are quickly adjusted to handle different sizes of material. The machine is very simple to operate.

—(Enquiry Ref. No. 11/03.)

High Capacity Tray

UP to 750 sheets, plus guide cards, can be accommodated in the *Alpa* machine posting tray. Fine trays, which are light and strong, are supplied in standard

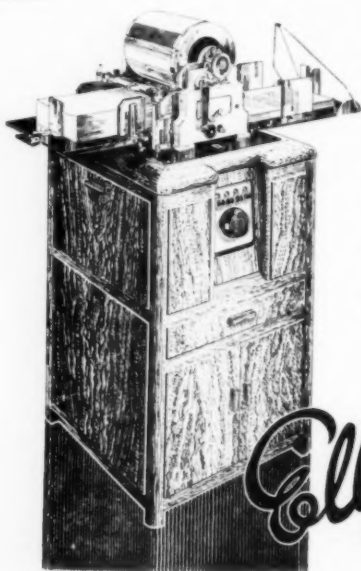
Left: filling magazines into envelopes with the *Craig Kemp* machine.



The *Alpa* posting tray with its associate stand and trolley.

sizes to take cards between 9 and 16½ins. in width; larger sizes can be supplied to order. Of steel construction, they have polished wooden ends, which prevent desks, etc., being damaged.

Adjustable height stands can be supplied to support the trays. They are fitted with a swivel top for all-round reference. A specially designed trolley is used for storing



GOOD CRAFTSMANSHIP is its own advocate—and as proof, we still find ourselves with a waiting list of keen folk who are sure that an excellent thing is well worth waiting for. Their patience has been well tried, but we can only say that as their names are reached, they will have the best duplicators it is possible to obtain.

These machines are fully guaranteed for 10 years. The M100E shown here is power-operated, feeding faultlessly from more than a ream of duplicating paper. It has also a world-patented, fully automatic inking system which will give neat and beautifully fine copies from start to finish and its self-acting counter will immediately switch off from duplicating as soon as the pre-set number is reached. Speed and pressure are

variable, reproducing all types of work—each copy exactly alike and equally excellent—of anything that can be written, drawn or typed and we shall be glad to give further details on request.

Collam's

DUPLICATOR COMPANY LIMITED

5 DEAN STREET, LONDON, W.1 • Telephone : GERrard 4556

FOR THE BUSY EXECUTIVE'S DESK

In their black and cream cabinets the new Edison Loudspeakerphone units fit smoothly into the setting of the modern office, forming an attractive addition to the busy executive's desk and providing the quickest and most efficient method of office inter-communication.

The Loudspeakerphone is completely secret in operation and its simple push-button call system gives instant and foolproof contact.

It is not a rental system, you make one payment only.

PRICE:

Standard Master Unit for 6 extensions **£22-10-0**

Standard Master Unit for 10 extensions **£23-10-0**

Extension Units (each) **£4-5-0**

NO PURCHASE TAX



SEND TO-DAY FOR FULL DETAILS

The Edison Swan Electric Co. Ltd. 155 Charing Cross Rd., London, W.C.2. & Branches

Member of the A.E.I. Group of Companies.

*To meet the
needs of the day*

THE
**CONFERENCE
DESK**

Oak



SimpoleS
LTD

THE DESK MANUFACTURERS SINCE 1843

BONDING HOUSE, BLACKFRIARS STREET, MANCHESTER, 3

and transporting numbers of the trays. The trolleys are strongly built of steel and are mounted on rubber-tyred castors; they will accommodate up to nine posting units.

—(Enquiry Ref. No. 11/01.)

Twin Light Copier

THE Mervac photocopier is an instrument with a number of unusual features. It may be used with four 60-watt tungsten lamps as a reflex copier providing facsimile copies of documents up to 20ins. by 16ins. Alternatively, the turn of a switch brings five 125-watt mercury vapour printing lamps into operation, and the instrument can then be used as an office dyeline printer.

A rubber blanket inside the hinged lid is connected to a vacuum pump and electric motor. When printing, the suction pad ensures perfect contact, eliminating the effects of creases or folds in documents, journal pages, etc.

The motor and pump are automatically started when the lid is closed and a locking bar is operated. An on/off switch controls the tungsten lamps, but as the mercury vapour lamps take five minutes to warm up, they can-

not be switched on and off for each exposure. Instead, they are allowed to burn continuously, and pneumatic shutters are used to control the exposure. Operation of the lid automatically opens and closes the shutters. No light can reach the exposure table when the lid is raised, so that registration, etc., can be carried out in complete safety. An extractor fan keeps the mercury vapour lamps cool.

The Mervac can be used (with mercury vapour lighting) for making reversals from autographic papers and for process work with litho plates and blocks. This work normally calls for arc lighting.

The cabinet is constructed of aluminium with a ¼in. plate-glass printing platen. It is 37ins. high and 28ins. deep, and is fitted with studs so that it can be joined up with a paper storage cabinet, work-table or other ancillary equipment.

—(Enquiry Ref. No. 11/07.)

Increases Desk Space

A STAND for a typewriter, calculator, dictating machine, etc., that can be fixed to any desk in a few moments, is the Ardex. It swings back out of the way



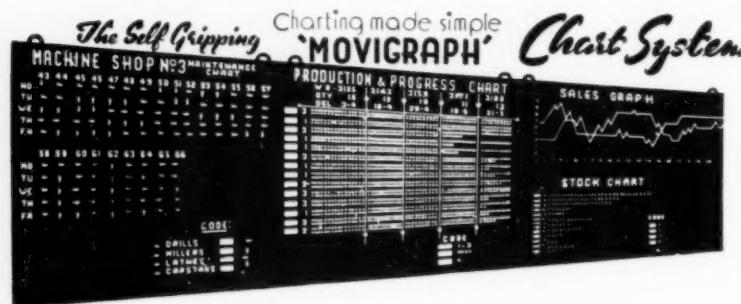
A typewriter is kept clear of the desk with the Ardex stand.

when not required, and it can be fitted to either the left or right of the desk.

Strongly constructed from steel castings and tubing, the Ardex will withstand weights up to 350lb.

The desk plate measures 17 by 14 inches, and is finished to match the colour of existing furniture.

—(Enquiry Ref. No. 11/02.)



The most flexible mechanical chart yet devised.

VISUAL CONTROL AT A GLANCE

A complete system or complementary to your present routine; offering adaptability to almost every phase of your business. Inexpensive to install and to maintain.

Industrial and Office Equipment
EQUIPU LTD.

27 CHANCERY LANE
LONDON - W. C. 2

Illustrated printed matter from your own machine

*The scope, simplicity and
economy of the latest
office equipment.*

TO the average businessman, office printing means little more than running-off a few letters on some form of duplicator. Anything more ambitious such as photographically illustrated brochures or colour work is frequently dismissed as being impracticable or too complicated.

Yet the Rotaprint, a very simple process, is available to the commercial business house and is so versatile that almost any print job in the office comes within its scope.

The great thing about this small office plant is the sense of having all your routine printing under your own control. All jobs are on easily

filed, thin flexible plates ready to run off copies at a moment's notice, whether the quantity be 50, 500 or 5,000. The convenience is outstanding!

It really would pay you at least to find out a little more about the advantages of handling your own print. But the essence of the matter is to get into good hands from the beginning.

For expert initial advice, free from extravagant claim and without the slightest obligation consult Kaye's Rotaprint. **BE SURE ABOUT THIS**, for Kaye's have the visible backing of extensive factories in Hendon, N.W. 9, with skilled personnel built up during 25 years intensive development of the Rotaprint Machines and Process.

Drop a line now to **KAYE'S ROTAPRINT LTD.**, ROTAPRINT HOUSE, HONEYPOT LANE, LONDON, N.W.9, or 'phone an enquiry to COLINDALE 8822 (12 lines).

THE GRANT PHOTO PROJECTOR

This new equipment has been designed to simplify the production of enlarged or reduced photocopies. Any type of document whether written, typed, drawn or printed up to 24 ins. square can be reproduced by anyone after a few minutes, instruction. In addition, screen and line negatives for litho work and reproductions of photographs are all within the scope of this compact versatile equipment.



GRANT PRODUCTION COMPANY LIMITED

4, RATHBONE PLACE, OXFORD STREET, LONDON, W.1.
Telephone: MUSEUM 8717 (3 lines)

Northern Agents

LE ROYS (NORTHERN) LIMITED
185, PRINCESS STREET - MANCHESTER, 1
Telephone - - - ARDWICK 2941

Short Cuts to OFFICE EFFICIENCY

Solving the Labour Problem

GOOD female office workers are still hard to get—and the position is likely to deteriorate. One firm has solved its labour problem by introducing a special night shift from 6 p.m. to 10.30 p.m. for part-time workers. This is aimed particularly at married women, with previous office experience, but now tied to their homes by children.

The argument is that by 6 p.m. the babies are in bed and the husband is home to look after the older ones; enlistment of 75 women suggests that it is a good one. The major difficulty reported is the training of husbands to handle

household chores during their absence.

Evening employees get a 20-minute break at 8 p.m. for tea or coffee, and paid holidays on the same basis as the day-time staff.

Work Study in the Office

TIME and motion study has not yet made much headway in the office. One mammoth industrial organization which maintains a large corps of time and motion study men in its factories has recently let one loose in the office.

The first result has been an instruction to typists that all typed material must start flush with the left-hand margin. No paragraphs

may be indented, and even "Yours sincerely" on letters, with the name and title of the signatory, start dead on the left. The results look a little queer, but output of the typing pool has gone up by 7 per cent. Average weekly wage of the typists is £5, and the firm considers that a saving of £35 a week in a department employing 100 girls is sufficient justification for some eccentricity of appearance in its correspondence.

Watch Your Records

AMERICAN cost-consciousness is reflected in some figures recently published by the (U.S.) National Records Management Council. The Council computes that it costs about \$29 a year to maintain the contents of one standard filing cabinet in the office. The same records can be kept for \$2.15 in a storage centre, giving a saving of \$27 a cabinet.

Of the records used in the average business, states the Council, less than 10 per cent. need be kept permanently; 20 per cent. must be kept in office space to meet cur-

Superseding the Use of Discs, Wire and Tape

Hundreds of leading British industrial and commercial undertakings have already installed the

DICTOREL

The Reliable
Magnetic Dictating Unit



AND HERE ARE SOME OF THE REASONS

Customers' Report

The machine is so simple to operate and we prefer the sheet of paper as the recording medium.

Our typists are so keen about the quality of reproduction and the easy reference back or forward to any desired point in the dictation.

With the constant use and re-use of the same sheet costs are cut to infinitesimal proportions.

WE GET 100% RELIABILITY

Notes for Prospects

There are no confusing knob or switch controls and you can feed the sheet of paper in faster than your note-heading into a typewriter.

No other machine possesses the instantaneous playback and pin-point index reference back or forward.

One dictogram sheet can be used and re-used indefinitely. Erasure is automatic with each fresh recording.

All our users will readily substantiate this claim.

with the DICTOREL Magnetic Dictating Unit.

Write, call or phone for a demonstration.

THE TREVOR-JOHNSTONE Co. Ltd.

169-174, Sloane Street, Knightsbridge, London, S.W.1.

SLOane 6198/9



VARI-TYPER

THE OFFICE COMPOSING MACHINE

SAVES TIME AND MONEY

HERE is a composing machine which justifies lines automatically, has instantly interchangeable type founts, makes perfect "masters" irrespective of the operator's touch—yet works as easily as an ordinary typewriter.

SEVERAL hundred different type faces are available, ranging in size from 6-point to 18-point, including italics. There are also complete founts for foreign languages, mathematics, chemistry and other special symbols—each one fitted at a twist of the wrist.

WHATEVER your method—stencil, direct plate, photo-litho—the Vari-Typer, used in conjunction with your stencil or offset duplicator, will effect a substantial reduction in your printing costs—quite apart from the saving of time and composing charges normally involved.



VARI-TYPER DISTRIBUTORS (Gt. Britain) LTD.

ALDWYCH HOUSE, LONDON, W.C.2. HOLBORN 2014

NOVEMBER, 1951

FIGURE-WORK AT YOUR FINGER-TIPS



Although it is a simple matter to operate a Sumlock Adding-Calculator, you will probably never give its keys more than a tentative tap. But your operator's fingers, flashing over the rows of keys, are ensuring that the figure work of your business is at *your* finger-tips. The Sumlock is a light, streamlined precision-built instrument that can do anything with figures in any currency. It adds, subtracts, multiplies, divides, and gives answers in decimals when required. Whatever your business, it is our business and pleasure to produce the machine that will bring figure-work to your finger-tips.



SUMLOCK

— A MACHINE TO RECKON WITH

Phone or write to:

SUMLOCK LTD

PEGent 1331

rent needs; approximately 30 per cent. should be transferred to storage, and the remaining 50 per cent. might just as well go on a bonfire—or go for salvage.

Coloured Cards

USERS of punched card equipment often overlook the fact that cards may be ordered in different colours, or with bands or stripes of different colours.

These can be used in various ways, but they are of special value in facilitating pulling, in applications where cards have to be pulled by hand.

In sales accounts work, for instance, under the "open item" method, each month's debit cards may be punched on a differently coloured card. Clerks will then be able to find the debit cards clearing current credits more rapidly, since the majority will belong to the previous or penultimate month, according to the credit terms usual in the trade. These, being of a different colour from those punched for the current month, will stand out readily. The statement or remittance ad-

vice accompanying a cheque will also usually show the date (and hence the colour) of the debit cards to which it must be married.

When cards are used for stock control, it is possible to have more than one unit in one file, and in such cases coloured cards can be used to avoid confusion.

These tips are taken from a new book, *The Elements of Punched Card Accounting*, by Harry P. Cemach (Pitman, pp. 137, 18s.), which gives a valuable introduction to the subject of punched card work.

Electric Typewriters

THE electric typewriter has come to stay. Every office manager must face it, and decide for himself whether it is worth his while to install one, in preference to a cheaper manual model.

There are three ways in which he can determine whether the increased output to be obtained will justify the capital expenditure:

(a) Get hold of the results obtained by other firms and average them out.

(b) Divide the typing work in his office into various categories, and get other firms' results for each of these categories.

(c) Pick a job that seems to be suitable for an electric machine, and keep production records for a month of the office performance on manual machines. Then obtain a trial electric machine, and when the typist acquires reasonable competence on the new machine keep production records for a month. A comparison of the two months' records will give a basis for working out the comparative costs of the two machines.

Cut the Gobbledygook

FOLLOWING his highly successful *Plain Words* published in 1948, Sir Ernest Gowers has now produced a sequel, an *ABC of Plain Words* (H.M.S.O., 3s.). Written at the request of the Treasury to improve official English, particularly letter-writing, it will be of immense value as a Christmas present for the office correspondence clerk—and his manager.

Solve Your Figure Problems with "CONTEX"!

WITHOUT straining the budget, the Contex offers accuracy, practically noiseless operation, portability, and the solution to your figure problems, without the need for special training.

ASK FOR A DEMONSTRATION TODAY!

Model	Capacity	Prices
S/1	£99,999 19 11½	£16 19 6
S/2	£999,999 19 11	£16 19 6
D	999,999,999	£16 19 6

OFFICE MACHINERY LTD.

National Distributors of Business Equipment

"Omni House" 22, Kingly St., London, W.1.

Phone: MAYfair 1028

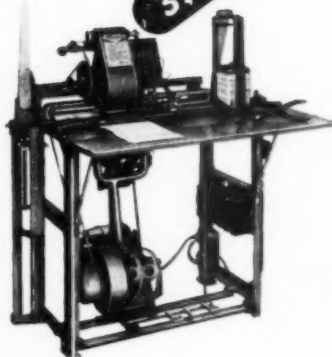


PROGRESS



How efficient is your mailing department? With the ADDRESSALL machine you are able to automatically address for dispatch up to 3,000 envelopes per hour—with absolute accuracy.

To those concerns who have the problem of regular mailings the ADDRESSALL machine will show a definite saving of time and money.



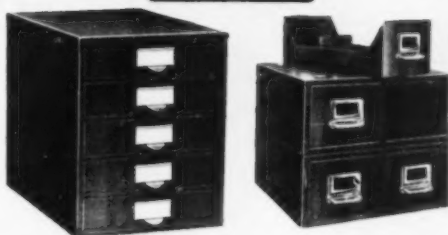
Why not send for our brochure which gives fuller details and information.

Addressall

MACHINE COMPANY

11-13 SOUTHAMPTON ROW, LONDON, W.C.1.
Telephone: HOLborn 3571-3572

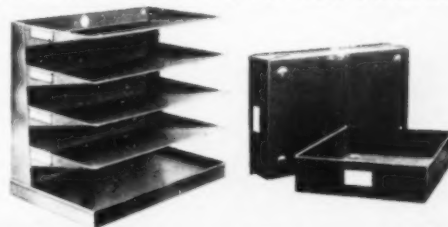
Harvey



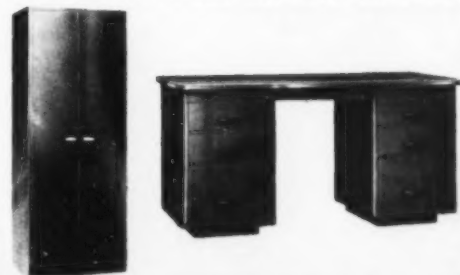
STEEL STATIONERY CABINETS AND CARD INDEX CABINETS.



STEEL BOOK RACKS AND STEEL WASTE PAPER TUBS.



STEEL LETTER RACKS AND LETTER TRAYS.



STEEL CUPBOARDS AND DOUBLE PEDESTAL STEEL DESKS.

All Harvey Steel Furniture and Equipment is of modern design, sound construction, and of the highest quality. Finished in Olive Green stoved enamel it is perpetually durable, fire-resisting, and proof against damp and vermin. Prices are competitive. Send for Catalogue No. BU 800.

Harvey

G.A. Harvey & Co. (London) Ltd.
Woolwich Rd. London, S.E.7

A Major Experiment at Austin's

Using Punched Cards to Control Production

By ROBERT SPARK

The application of punched cards to production lines is new. Hence great interest attaches to an experiment now being exhaustively made in the Austin car factory. Here is the first full description of how an accepted office method may play a vital role in the factory.

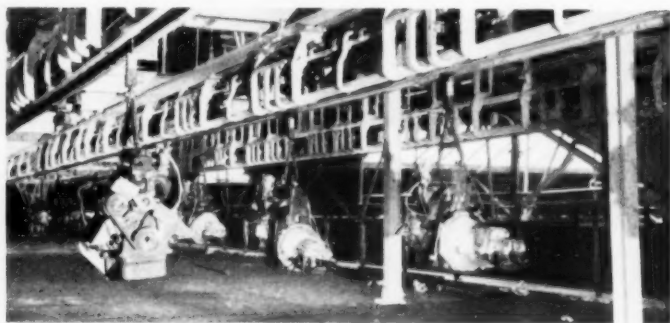
PUNCHED card techniques have, in recent years, become an accepted method of handling accounting and statistical work in the office. But paper work has spread far beyond the counting house, and, with the expansion and elaboration of manufacturing operations, absorbs more and more man-hours on the shop floor. The time is thus ripe for the application of advanced office

methods in solving the problems of production control in the factory, and the first step in this direction is now being taken by the Austin Motor Co., Ltd. In their new factory at Longbridge, Birmingham, Austin's have started using punched cards as a medium for co-ordinating the flow of components to the production line. Thus a mechanism so far limited to office work has now become a tool for the production manager.

In the new factory there are three self-contained plants, responsible for engine, body and axle assemblies respectively. Each plant has a number of lines covering the different models produced. Five basic designs are produced, but minor differences bring the number of models to the astonishing total of 800. In the body assembly plant, for instance, there is a production line for the A70 Hereford saloon, but variations include bodies for left and right-hand drive, with or without sunshine roof, different types of upholstery, etc. Similar variations occur in the engine assembly line.

The products of these three plants feed the newly-opened car assembly plant. Here chassis meet up with the axle assemblies, bodies and engines. The medium of transportation between these points is a vast overhead conveyor system of ingenious design. Of even greater ingenuity is the system employed to ensure that the right engine is installed in the right chassis which matches up with the right body, and that all these operations are perfectly synchronized.

Planning work begins with the production manager, who is responsible for drawing up yearly,



Top: the conveyor tunnel linking body, engine and axle assembly lines with the main assembly plant. Lower: engines awaiting automatic release on to the conveyor.

- A40		SALOON		H 012735		R F		S GREY		BRWN		M L W S		S L D S																																	
Horse Power		Description of Type		Sales		Colour		Trim		Seat		Glass		Equip. Price																																	
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SPECIAL DETAILS				SPECIFICATION				ENGINE NO. 12345678				CHASSIS NO. 12345678																																			
BODY				APD				ENGINE				CHASSIS																																			
SPECIFICATION CARD																																															
THE AUSTIN MOTOR CO. LTD.																																															
S.P.O. NO.																																															
CHASSIS NO.																																															

A typical punched card which, in this case, represents an A40 saloon for the home market with right-hand steering, fixed roof, colour silver-grey, without radio and with heater. Other details are included on the card as well.

monthly, weekly and daily production programmes for all types of vehicles. The types and quantities of vehicles to be manufactured are, of course, based on sales demand, which to-day means the maximum output obtainable with the raw materials available.

Once the general programme has been decided, it is passed to the production controller, who breaks down the overall programme into workable units of time. The minimum is 18½ hours, and the maximum usually a week. A master list is then prepared covering several days' production. This shows exactly what type of vehicle is to be produced and the order of manufacture. With 800 possible permutations, the list is naturally varied in content.

Once the master list is drawn up, it goes to the punched card department. From a pulling file in this department a set of pre-punched master cards are withdrawn which conform exactly to the master list. The pulling files consist of a large number of pigeon-holes containing sets of master cards incorporating all specifications and covering every model and variation of model. There are enough of these pre-punched cards to cover maximum production. They are withdrawn and collated by hand.

At this stage typewritten lists cease to be used, and cards become the only medium.

The pack of master cards in their right sequence is then passed through a reproducer, which produces an identical set of cards, and this set is, in turn, used to produce two further identical sets. The master pack is then returned to

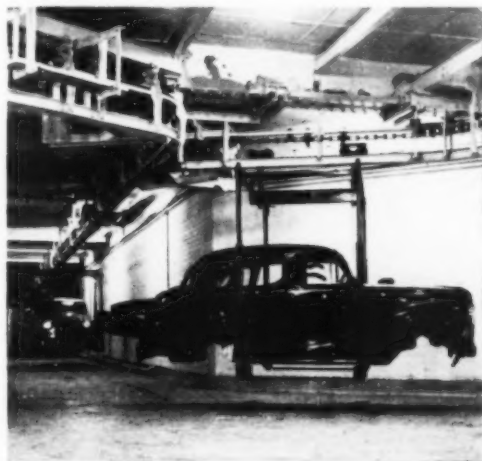
the pulling file. The three sets are used to cover body, engine and axle assembly.

Each pack is again reproduced and duplicated for the reason given below. One pack is maintained in normal "production order." If, for instance, the first four cards of a pack covering engine assembly refer to the following engines: A40 right-hand drive, A70 left-hand drive, A40 left-hand drive, A70 right-hand drive, it means that these engines will be required in the car assembly plant in that order at a given time. This pack can be referred to from now on as "Pack A." The second set of cards, or "Pack B," is passed through a sorting machine and sorted by engine type: so that all A70 and all A40 engines are together. This pack goes to the engine assembly factory at the ap-

propriate time, and the cards are distributed to the beginning of each assembly line covering each type of engine. Thus at the beginning of the A40 engine line are all A40 cards (containing all the variations of A40 engines needed), and these act as work orders for the assembly of the engines.

Pack A is sent to the conveyor system control room, where the cards are used in conjunction with the conveyor system for the automatic release of engines on to the feed conveyor. The punched card machines, which control the release of these engines (likewise axles and bodies), are time-driven by a power take-off drive from the body feed conveyor. This equipment senses the next card for the type of engine required. The electric impulse is transmitted

Bodies arriving at the point where they are automatically transferred from the main conveyor to the appropriate point beneath the assembly line.



back to the conveyor line and the "dog" picks up the right type of engine.

If, on receipt of the electrical impulse, the next card refers to an A70 engine, then the carrying "dog" will be marshalled to the position at the end of the A70 assembly line, where it will automatically receive an A70 engine. In this way, not only are the engines produced in exactly the sequence required, but they are also picked up by the conveyor system and delivered to the car assembly plant in the correct order.

If every carrying "dog" received an engine, it would mean that the system was working at maximum output. To secure the necessary flexibility in speed, blank cards are used to keep the assembly line fed at any speed desired. If the maximum production is 1,000 cars per day, and the desired rate is 600 per day, 400 blank cards are included in the pack of cards referred to as Pack A. The blank cards are pulled from the pulling files and form part of the master pack. If a sudden increase in production is necessary, the whole process can be speeded up simply

by withdrawing some of the blank cards. Conversely, the line can be slowed by inserting blanks.

The speed of conveyors remains constant, production rate being altered by the insertion of blank cards. Bodies take longer to produce than engines, but this only means that production of an engine for a given body starts some hours after the body is on the line. Speed of the conveyor is not affected. The total period from the time a body starts as a pressed panel to final completion is 18½ hours.

It is virtually impossible, for instance, for an A70 body designed for left-hand drive to be fed to the car assembly line on to a chassis designed for right-hand drive. Naturally, this is a relatively simple example, but it will be realized that with the high speed of production, coupled with the many variations in design, mistiming of delivery of engines, bodies or axle assemblies, would lead to complete chaos in a matter of minutes.

Although at the present moment the punched card equipment is limited to the conveyor line system for the "calling up" of engines,



An A70 body being lowered on to its chassis.

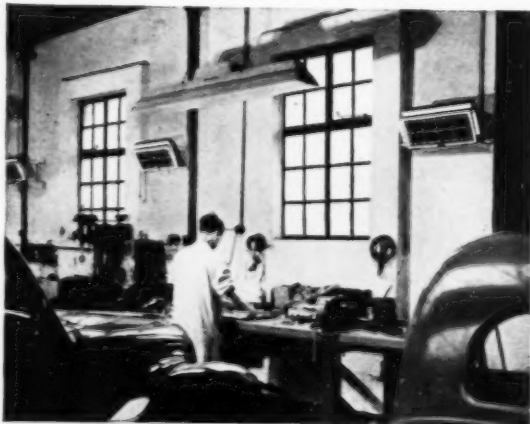
bodies, etc., in the right sequence, it is hoped to extend it to the simultaneous production of invoices. If this is carried out it will mean that invoices and other documents will already be prepared and in their right order at the end of the assembly line before the car is actually completed.

THIS WORKSHOP CHANGED TO DE LA RUE *RADIANT* HEATING and benefited 4 ways

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X-Rays Save Destruction of Suspected Stock

By A. G. THOMSON

By using X-rays for the inspection of stock suspected of containing foreign bodies, the H. J. Heinz Co., Ltd. isolate the actual tin involved and thus avoid the wholesale destruction of costly production.

TO ensure that no foreign bodies gain access to their products, the H. J. Heinz Co., Ltd., insist on a series of detailed examinations and checks all along the line.

In the first instance the raw materials themselves (crops are grown under the supervision of Heinz's own field inspectors) are subjected to the closest scrutiny on arrival at the factories by a quality control department.

The vegetables and fruits are then thoroughly washed under a battery of high-pressure water jets, and individually inspected and trimmed by experts.

Both in the cooking and filling processes, the raw materials are under constant surveillance, and the cooking utensils themselves are subjected to inspection.

The operators wear white overalls and white caps which completely cover the head. Jewellery is not worn. A full-time manicurist is in attendance to keep hands in perfect condition. These constant checks *all along the line* are considered the best insurance against any foreign body entering the finished products. The chance of such a thing occurring in the factory of any reputable food manufacturer is infinitely less than in the ordinary home kitchen.

Very occasionally, however, a piece of material—such as a rivet from a machine—may be found, on routine inspection, to be missing. There is consequently the remotest chance that it could have found its way into a can, and the whole production from that line since the last inspection is suspect. Before the introduction of X-ray equipment, the suspect batch would have been isolated and destroyed,

for no risk whatsoever could be taken when a foreign body might be in the product.

This procedure led inevitably to the destruction of a certain proportion of production. It was decided that if an X-ray plant were installed, such stock could be passed if it were found that suspicions were correct and it was possible to isolate the can containing the foreign body.

The plant consists of a moving belt on to which is loaded any doubtful stock. An operator sits inside a cabin and watches a screen on which an X-ray picture of each package in turn is thrown.

A "stop and start" mechanism enables the operator to drop red ink on to the can containing the foreign body. The rest of the stock can then be passed for normal distribution, and waste of high quality food products—so undesirable to-day—is thus obviated.

On one occasion a rivet was

found to be missing when a machine was receiving its routine cleaning and daily check. The whole of the production which had passed through that particular machine since the previous check—6,000 dozen of Scotch Broth—was immediately quarantined. Before the introduction of the X-ray equipment the whole batch would have been destroyed, but examination under this machine enabled the rivet to be located. Hence one can was destroyed instead of 72,000.

The X-ray plant is not used to examine all production—only suspect goods. It is felt that if an X-ray machine were to be put at the end of each filling line the knowledge that every can was being inspected at the end of the line would tend to detract from the observation and care demanded from, and given by, all employees. It is felt that to imprint on the minds of everyone the need for perpetual supervision of the product throughout its manufacture is sounder and safer.

Connected with this X-ray plant is an industrial hazard in that continuous exposure to X-rays has a pathological effect on an operator unless the rays are controlled. In the installation of the plant the greatest attention has been paid to this fact. The whole area has been enclosed in *Plymar*—a laminated plywood with a lead layer which forms an effective screen.

A Geiger-counter is used to examine all parts of the X-ray plant to see that no rays escape which might be harmful to the health of the operator.



The operator in her cabin watching the screen on which an x-ray picture of each package appears.

Survey of Modern **INDUSTRIAL EQUIPMENT**

PROCESS EQUIPMENT

Gas-Fired Gun

ARMED with the *Ace G.B.* solder gun, any mechanic can solder metal parts more quickly and efficiently than is possible with ordinary irons.

The gun is operated from an acetylene welding plant, but either



The *Ace G.B.* solder gun.

oxygen or compressed air can be used. Movement of a lever instantly converts the solder gun to a welding torch. Used for soldering, the gun will spray up to 1lb. of solder per minute; at a pressure of 25lb. per sq. in., oxygen consumption is 1½ cu. ft. per minute.

One hand only is necessary to operate it and the solid solder is gravity-fed into the flame. The gun is supplied in a case complete with accessories.

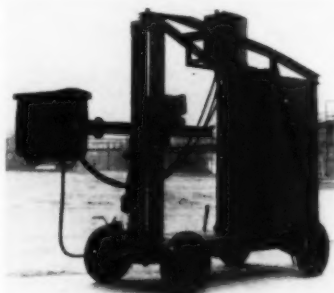
—(Enquiry Ref. No. N.51/70.)

Hidden Flaw Detector

THE *Raymax* 250 industrial X-ray unit operates at 250,000 volts and is suitable for the non-destructive inspection of weldings, castings, etc., to an equivalent thickness of 3ins. of steel. The X-ray tube and the high-voltage

generator are both immersed in oil in a single dust and damp-proof tank.

There are no trailing high-voltage cables, and the unit is independent of water supplies; efficient oil-flow cooling enables the unit to be operated continuously with safety. The X-ray head has a jib-crane mounting, giving 6ft. vertical and 4ft. horizontal travel. The head may also be rotated in both planes. The control panel is built into a lead-



The 250,000 volt *Raymax* 250 industrial X-ray unit.



**The Safe way
of filing!**

THE PROTECTION of important correspondence and documents is too often entrusted to an ordinary steel filing cabinet, which does not, of course, offer a high degree of resistance against fire, fall or theft. The illustration (left) shows a specially constructed MILNERS Fire-Resisting Safe fitted with a Three-Drawer Vertical Filing Cabinet. Four-Drawer Cabinets are also available and both can be supplied with or without the castor base unit. This gives the maximum protection against the aforementioned hazards. Company Secretaries and other guardians of important papers should seriously consider the installation of at least one of these Safes in their private offices.

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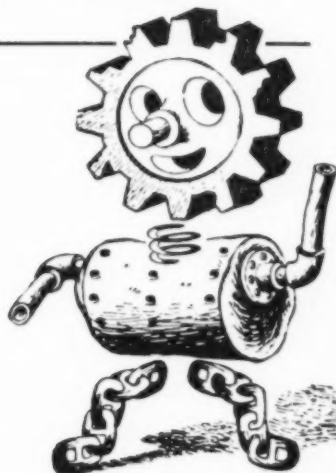
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lined cab, ensuring complete protection for the operator.

Full facilities for controlling electrical and radiation values are provided, including devices for automatically timing the X-ray exposures.

The complete unit is mounted on a rubber-tyred trailer, and being self-contained, except for power



supplies, it can be moved immediately for use in any part of a shop or factory provided electricity is available.

—(Enquiry Ref. No. N.51/63.)

Speeds Plastic Welding

TWO materials much used for packaging are *Alkathene* and *Pliofilm*. Neither is particularly difficult to heat-weld satisfactorily, but up to now seals have had to be given time to cool before removal from the jaws of the welder. This has been a serious drawback where a rapid output is required.

In the design of the Autobond sealer, a technique has been evolved which overcomes this difficulty. Between the heating element and the plastic film, a band of fabric is passed; when the heat is applied the two films not only weld together, but also adhere to the fabric band. As the band moves on, it carries the sealed packets, etc., with it, and the joints thus have time to cool before the packets are peeled off.

Temperature, duration and pres-

Left: the Autobond plastic welder.

sure of weld are all pre-set and automatically controlled so that no skill is needed to operate the machine. An output as high as 50 welds a minute can easily be maintained. Control is by a foot pedal, and the operation is magnetic. Dimensions of the welder are: 20ins. high by 11ins. wide by 9ins. deep; the weight is 27lb.

—(Enquiry Ref. No. N.51/69.)

LIGHTING EQUIPMENT

Portable Daylight

A NEW development in fluorescent lighting is the *Procon Handilamp*, a portable unit that

Portable fluorescent lighting is available with this new lamp.



Space Problem

B.E.V. High Lift Fork Trucks are extremely manoeuvrable and are able to stack above head height, this makes them invaluable wherever space is a problem.

We show a typical B.E.V. Truck at work in a Liverpool factory. If you have a handling or storage problem, our technical staff can advise you.

Photographs, courtesy of Belling & Lee Ltd.

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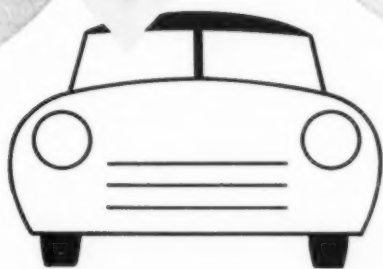
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NOVEMBER, 1951

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makes this type of illumination possible in places where it cannot normally be used.

Three models of the lamp are available; a self-contained battery type which works off two 45 volt dry batteries another model operating directly from the a.c. mains and a third model that can use either of these sources as its power supply.

A 9in., 6-watt fluorescent tube is fitted in the front of a sheet steel box that houses the batteries and/or the chokes, etc., and a curved plastic window protects the tube and reflector from damage or breakage.

Weight of the lamp varies between under 5lb. for the mains-only model to just over twice as much for the model that uses mains or batteries. A plastic handle, push-button on/off switch and a light green stove enamel finish make the Handilamp pleasant to look at.

—(Enquiry Ref. No. N.51/72.)

PUMPS & COMPRESSORS

Self-Priming Pump

WEIGHING only 59lb., the 1½in. Alcon self-priming pump is a highly portable unit

with an output rate of 3,400 gallons per hour. The special grade aluminium alloy body will withstand high pressures and is non-corroding.

Powered by a single-cylinder, 4-stroke petrol engine, the unit



The petrol engined Alcon self-priming pump.

incorporates a special phosphor bronze impellor, the blades of which are specially designed for high efficiency and rapid priming.

The Alcon pump is one of a range of units made with either petrol or electric motors. They are available in sizes from 1½ins. to 3ins.

—(Enquiry Ref. No. N.51/74.)

PAINTS & FINISHES

Peel-off Lining

PAINT spray booths inevitably collect a considerable coating of "overspray" paint over a period of time, and the job of removing this with scrapers is laborious and wasteful of effort.

A new material, *Pultac*, when applied to the inside of booths can be peeled off when necessary, removing the surplus coating of paint with it. The material may be brushed or sprayed on, is non-inflammable and resistant to thinners.

The only preparation of the surface necessary before applying *Pultac* is cleaning down and removing any loose material, such as rust. The preparation can be

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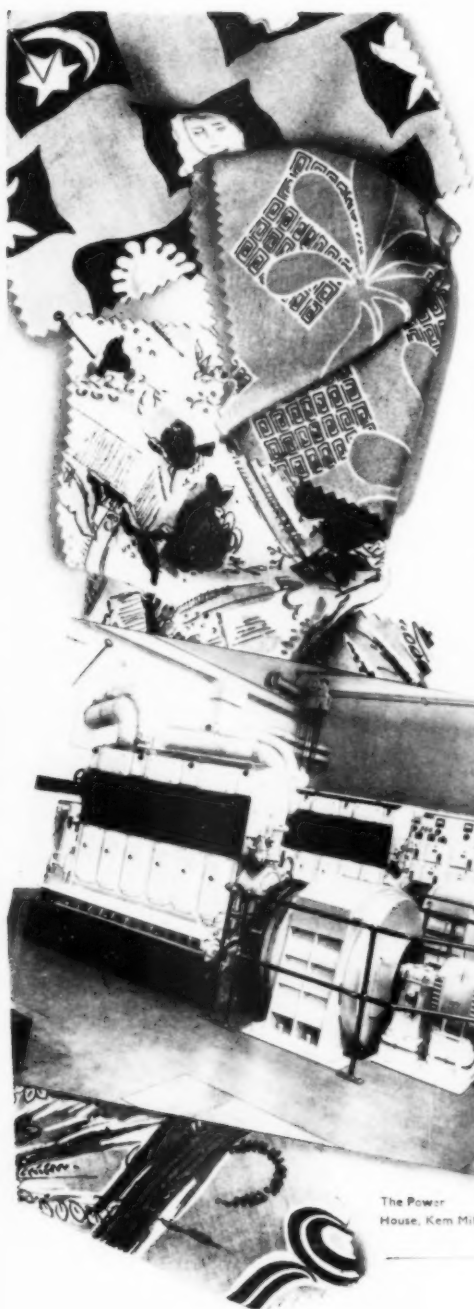


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—(Enquiry Ref. No. N.51/60.)

GENERAL EQUIPMENT

Precision Pressure Control

A NEW high-pressure piston valve is claimed by the manufacturers to give a degree of flow control unknown with older types. Primarily designed for instrument work, Klingerflow valves



Steam, oil, etc., can be precision controlled with this valve.

are tested to a pressure of 9,000lb. per sq. in., and are suitable for working with oil pressures up to 5,000 p.s.i. and up to 2,000 p.s.i. with superheated steam.

The load exerted on the thread when closing the valve is small, because the diameter of the spindle is greater than the piston itself. A "bonnet" nut bears on the twin valve rings, and when slight wear eventually occurs, tightening this nut immediately negates its effects. All the working parts are made of stainless steel, and the body is a drop forging with the "flats" 1in. apart; the bore is 3/16in.

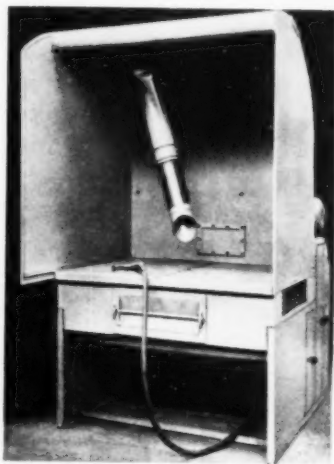
—(Enquiry Ref. No. N.51/64.)

AIR CONDITIONING

Combating Dangerous Dusts

MAGNESIUM alloys are finding increasing use in many industries, notably in those concerned with the manufacture of aircraft and their engines. Although these alloys have advantages for certain types of work, their highly inflammable nature presents certain problems.

Among these is the collection and disposal of magnesium dusts—which can be explosive. The Multiswirl unit dust collector has been designed specifically to overcome this problem. The dangerous dust is collected by extraction



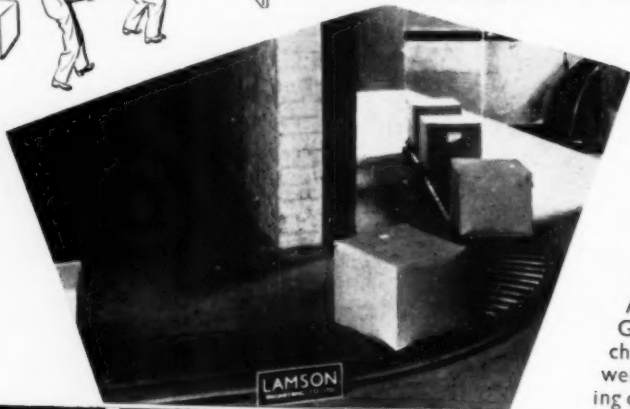
The booth model of the Multiswirl dust collector.



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For sizes, heating capacities, prices, write today for catalogue ER.

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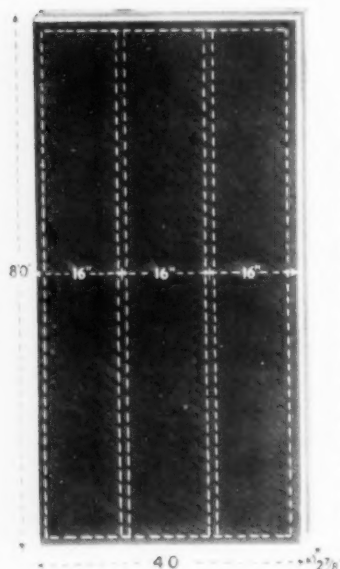
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Above: A typical 'K' Panel.

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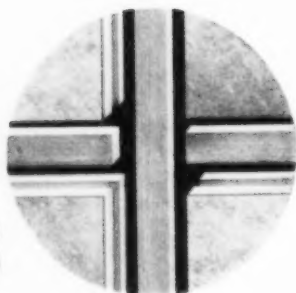
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'K' PANEL PARTITION

The panels are practically self-erecting and in two recent instances extensive assemblies were

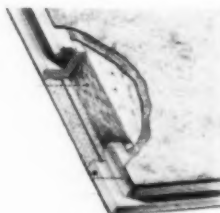
Installed during a weekend

ready for occupation on Monday morning. Each panel consists of a timber framing with intermediate studding, packed with heat-insulating sound-absorbing 'K' Slabs and faced on each side with a double thickness of hardboard.

Only the very minimum of additional framing is required, and the hardboard facing will take any decorative finish.

The range of sizes covers all normal requirements, and full provision is easily made for the incorporation of windows and doors.

'K' Panel Partitions form a rigid and secure structure, but they may be rapidly dismantled and re-erected elsewhere if desired.



1/2 SWEDISH HARDBOARD
TIMBER FRAMING
'K' SLAB

Detail of the
unique construction
of 'K' Panels.

ducts and is scrubbed and immersed three times in a water-filled chamber. A range of safety devices is incorporated to prevent machines being used if the air velocity is insufficient for collecting all the dust; these also operate if the water falls below a certain level, or if for any other reason the dust collector is not working properly. A delay switch prevents operators switching on their machines until five minutes have elapsed, allowing time for the extractors to clear any accumulation of gases.

Various types of *Multiswirl* unit are available, including bench and booth models. These are fitted with plastic roller worktables (allowing large particles of metal to drop into a water bath) and telescopic extractors that collect lighter dust by suction.

Fluorescent lighting is fitted to the booth model. On units designed for use with double-ended polishing and grinding machines, the plastic rollers and telescopic extractor are replaced by hoods.

—(Enquiry Ref. No. N.51/61.)

MECHANICAL HANDLING

Stacking in Gangways

A RANGE of pedestrian controlled pallet stacking and transporting trucks — *Palastacas*



A Palastaca truck at work in a railway van.

and *Palatrucks*—are by their design especially useful for work in narrow gangways and confined spaces, such as railway vans. Instead of the conventional

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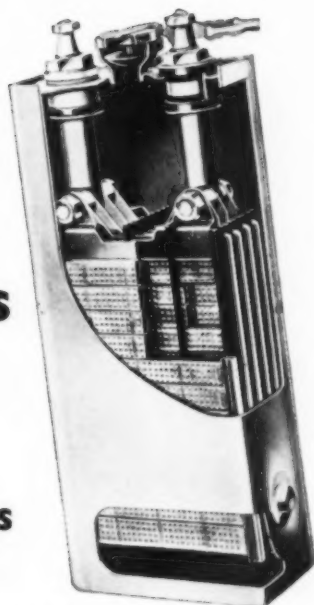
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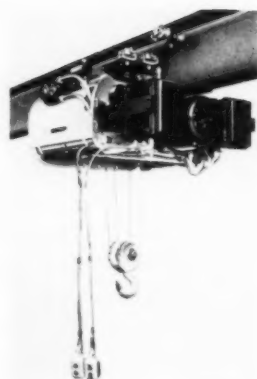
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The new small-headroom Lo-Hed hoist.

method of counter-balancing the load with ballast, these trucks have a pair of wheeled feet that project forward and take the weight.

The power unit, gearbox and hydraulic pump are all enclosed in a 14in. diameter cylindrical housing mounted behind the lifting mast. This housing, the steering tiller and other controls are placed directly over the driving wheel. So compact is the arrangement that the trucks can be used for stacking 40in. by 40in. pallets in gangways only 48ins. wide.

Maximum height of the stacking truck is 5ft. 11ins.—low enough to allow easy access to most vans, doorways, etc. The transporting trucks have no lifting mast and are therefore even lower. "Free" lift height on the *Palastaca* is 4ft. 6ins., and it will stack pallets in piles up to 8ft. in height.

Lifting capacity can be $\frac{1}{2}$ or 1 ton, and a special feature of the equipment is that the forks are given a tipping motion, allowing stacking to be done flush against a wall.

—(Enquiry Ref. No. N.51/68.)

Lower Head Hoists

THE manufacturers of the Lo-Hed fluid drive hoist have produced a new model that needs far less headroom, yet is not so costly as previous models. The load bar, which previously supported the complete trolley, has been eliminated, and the drive unit is now built into the trolley frame. This has reduced the distance from the track beam to the

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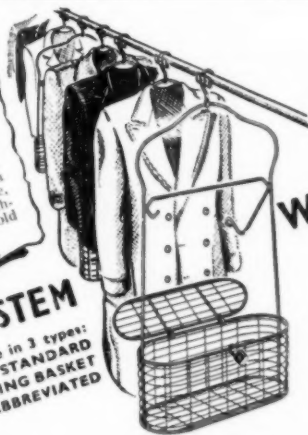


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back by 8 ins. giving that much increased lift height.

The drive is taken from an electric motor through a pump and oil motor to the trolley wheels. This arrangement gives instant reversing without valves or levers, while the pressure in the transmission system eliminates the need for a brake. Reversing is achieved by pressing the appropriate button on the control panel. These controls may be of the pendant type, or remote stations can be used at any number of points.

Standard travelling speed for hoists of up to 4 tons capacity is 100 ft. per minute; if required, the units can be adjusted to run at other speeds.

—Enquiry Ref. No. N.31/66.

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A HANDSOME machine is the Pilot hydraulic power cropper. It is intended for continuous cutting of mild-steel plate up to 3 in. in thickness, or intermittent cropping of bars up to 3 in. thick and 2 ins. wide.

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Modern in
design is the
Pilot power
cropper.



operation. An automatic knock-off stops the blade and releases the clamp at the end of each cut. Up to 4 clean cuts can be made per minute with the Pilot. Although the feed applied to the blade is 17 tons, the machine itself weighs only 16 wt., and it occupies but 3 sq. ft. of floor space. Actual dimensions are 31 in. by 31 in. by 31 in. Power is supplied by a 2 hp. 400/440 volt motor.

—Enquiry Ref. No. N.31/66.

BUSINESS

Exports This Year May Be Doubled

DESPITE material shortages and other handicaps, the possibility of the office equipment industry doubling its 1949 export achievement this year would seem by no means such a long chance.

In July over £1,130,000 of equipment of all sorts was shipped overseas, bringing the total for the seven months into the region of £6½ m., compared with £6¼ m. in the 12 months two years ago.

The machinery section's exports during the period produced a revenue increase of 130 per cent. over the corresponding figure for 1949, and safes and cabinets yielded a 40 per cent. improvement.

In July no fewer than 6,474 complete typewriters to a value of £185,295, and 2,462 accounting machines, to the tune of £223,572, were shipped abroad.

Australia remains easily Britain's best customer, having bought no less than £1,083,506 of machinery alone so far this year, well over three times the value of that sold to her in the same seven months of 1949. Canada's comparatively small imports of £53,000 odd in this period of 1949 have been quadrupled this year, and the value of exports to Sweden doubled.

★

CAPITAL increases continue.

Treasury consent has been obtained for a capital bonus issue by the Lamson Paragon Supply Co., Ltd., of one new share for every share held. The authorized capital of the company will be increased to £1,750,000. An application by Chubb and Son's Lock and Safe Co., Ltd., to increase its capital is now before the Capital Issues Committee. In his annual statement to shareholders, the chairman, Mr. H. E. Chubb, pointed out that to finance expansion at home and in Australia and South Africa, the company had been largely dependent on a bank overdraft. At March 31 last, this

continued on page 96

NOVEMBER, 1951



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amounted to £130,028. Group trading profits for the year ending March 31 amounted to £190,308, compared with £142,283 in the previous year.

★

EARLIER this year the British Tabulating Machine Co., Ltd., increased its equity capital from £450,000 to £750,000 by the issue of 300,000 new £1 ordinary shares at 50s. each. The directors are now proposing to distribute a capital bonus of 150 per cent., which will bring the total issued ordinary capital to £1,875,000. With the £400,000 of preference shares, the nominal capital of the company will then be more in line with the capital actually employed in the business, and thus, as the directors observe, "more truly reflect the standing of the company in the home and overseas markets."

The company's last report covered the year to September 30, 1950, and showed earnings of 96 per cent. for the 20 per cent. dividend. When new capital was raised in March this year to repay short-term indebtedness, the directors indicated that they were reasonably confident of their ability to maintain a 20 per cent. dividend rate on the increased capital.

The last balance-sheet showed a bank overdraft of more than £400,000 together with £1,200,000 borrowed from F.C.I. in 1948 and 1949 on five-year debentures.



Mr. Jack Chollar of the American organization and Mr. T. B. Glynne-Williams, European Sales Supervisor, emplaning for a visit to Remington's new factory at Hillington, Glasgow, with the Remington Rand Sales Conference delegates. (See story opposite.)

MR. W. G. Gledhill, honorary treasurer of the Office Appliance and Business Equipment Trades Association, has just celebrated 28 years' service on the council of the Association and its predecessors. He was chairman of the Office Appliance Trades Association during the difficult war years. He was a founder of the international body to which the Association is affiliated.

G. H. Gledhill and Sons, Ltd., of which he is London manager, will celebrate their diamond jubilee next year. G. H. Gledhill took out his first patent in 1886, and sold his first till in December, 1887. By August, 1891, he had sold his thousandth till, and sold the drapery business, to devote his full time to the production of cash registers. In due course his son, W.G., followed him in the business.



THE first Remington Rand Consumer Marketing Conference to be held in Europe ended in London on September 29. During the 12 days the Conference lasted, 17 delegates from France, Belgium, Holland, Western Germany, Norway, Sweden and Switzerland discussed sales promotion methods in Remington's shaver and portable typewriter division.

The Conference included a week-end visit to the new Remington manufacturing plant at Hillington, Glasgow.

The keynote of the Conference throughout was the problem of European rehabilitation. The keen spirit of international co-operation shown in matters of European marketing was typical of the efforts of private enterprise to assist the European Recovery Programme. Its success will give new impetus to the British organization's export drive, and acquaint European delegates with the latest methods of production and sales promotion.

Notable personalities who addressed the delegates were the Rt. Hon. Lord Mancroft, M.B.E., T.D., Mr. A. G. Bottomley, the Secretary for Overseas Trade, Mr. Marcell N. Rand, and Mr. Jack Chollar, of the American parent company.

Remington Rand England, Ltd., acted as hosts, with Mr. T. B. Glynne-Williams, European Sales Supervisor, in the chair.

NOVEMBER, 1951



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No, Mr. Perks.

Then perhaps the country has moved to us?

Not that I know of, Mr. Perks.

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new-mown hay.

It's the Walter Ozoniser, Mr. Perks—that little box
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Really, Miss Jones?

Yes, Mr. Perks. Mr. Bones says it will last for years
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Ah, I might have known old Boney would have an ulterior
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Bringing Together Industry and the Church

By C. BRYANT

Five years ago in Redditch, a Baptist minister sought new ways to reach the people of his district. He turned to the factories in the neighbourhood and became works chaplain at the Hymatic Engineering Co., Ltd. This enabled him to help workers with problems outside the scope of the welfare department and simultaneously to bridge the gap between the Church and industry.

THE Christian Church has always been concerned with the daily work of men and women, and in the last few years that concern has found a new expression in the person of the industrial chaplains — ordained ministers, whose lives are chiefly spent in visiting factories and helping workers with their problems. Whether the Church has advised managers on their problems is not on record, but it is not very likely that the help would be denied. The Church does not attempt to say how a business should be run, but it does claim a right to speak about the moral principles involved.

Some five years ago an attempt was made in Redditch, Worcestershire, to bridge the gap between the Church and industry. Searching for a means of getting to the people of his district, the Rev. Dennis H. Horwood, a Baptist minister, turned to the factories. Here, he thought, were typical man-made communities far removed from the influence of the Church. Here were convenient groupings for an evangelistic approach.

Mr. Horwood was saved from the possibility of complete failure by the foresight of Mr. J. A. Hunt, managing director of the Hymatic Engineering Co., Ltd. On Mr. Hunt's advice, Mr. Horwood made his approach to this company through the joint consultative committee. This method ensured a measure of co-operation from the start. If entry had been

gained on the managerial level alone, Mr. Horwood would have been suspected of ulterior motives.

Having been accepted as the works chaplain, Mr. Horwood was given an office, which he visited once a week. The first weeks were difficult and lonely, but as time went by he came to be known as the friend and *confident* of anyone in trouble. Notices were posted giving the days on which he attended; the welfare department helped by making his appointments and referring to him cases in which they thought his experience or approach would be more useful than their own. One result of this was that the welfare officers were able to concentrate on internal problems.

The problems which Mr. Horwood had to face were many and varied. Broadly speaking, they fell into five main groups: personal relationships, domestic life, housing, child guidance, and purely spiritual issues. Thus the feeling of loneliness that grips both the young and "imported" worker often gave opportunities for friendship and guidance to the chaplain, while strained relationships in the factory were frequently resolved by a visit to his office.

The worst problems, however, were those connected with housing. Mr. Horwood tells the story of one young girl who collapsed at her machine and was found to be living with her husband at the



As a minister of religion, the Rev. Dennis H. Horwood is in a unique position to deal with workers' personal problems.

home of a man who appeared to be almost insane.

"Conditions were such that neither of these young people could have a meal before setting out for work, and even during the night they were disturbed by their landlord," says Mr. Horwood. "I was called in and made arrangements for the furniture to be stored, while the husband and wife were installed in different lodgings—the only course open at the time. Thanks to local contacts, I was able to find a small flat next day, but on going to the factory to break the good news I was met by a worried young husband who had been sent for by the police.

"On arrival at the police station we found that the strain had been too much for his wife, who had tried to throw herself under a bus, and had been taken to the police station. Here there seemed a likelihood of a charge of attempted suicide but I was able to persuade the police to let the girl go with me, on condition that I would be responsible for her. Late that night she and her husband were installed in the new home, and I left two exhausted, but contented, people to begin life afresh."

As a minister of religion, Mr. Horwood was in a unique position to deal with the problems that came his way. After two years' work at Hymatic, he added two more factories at Redditch to his list of industrial chaplaincies—those of B.S.A. Tools, Ltd., and the Index Automatic Machine Co., Ltd. In each case the approach was the same—through a joint consultative committee or similar body. This arrangement, coupled with the fact that his income derived from the Church, and not from any of the firms concerned, enabled him to avoid the suspicion that would almost certainly have followed if he had appeared as a "manager's man" or a "labour man."

Tributes from Workers

Mr. Horwood has recently moved from Redditch to Luton, but the work at Redditch will go on. His departure was marked by the presentation of cheques from the workers and tributes from the welfare departments. One factory stopped work completely for the farewell ceremony—and this

in itself was a generous tribute to his work.

Mr. Horwood himself makes this comment on the experiment: "I assumed that a man who was troubled would not be able to produce his best work. That has been proved correct, and it is significant that shop stewards and departmental managers have co-operated by letting me know about people who seemed to be in need of help. The managements have done their part by allowing workers to come to me at any time of the day.

"The Church," he adds, "is anxious to show that Christianity is concerned with everyday life. I myself believe that lack of responsibility is the key to a good many difficulties in industry generally and in people's private lives. Christianity can, perhaps, help to give men and women that sense of responsibility. All my work has been done on an inter-denominational basis, and I am happy to say that I have had full co-operation from all the clergy in Redditch. It goes without saying that I look on the experiment as a way in which the Church can help, rather than impose itself on industry."

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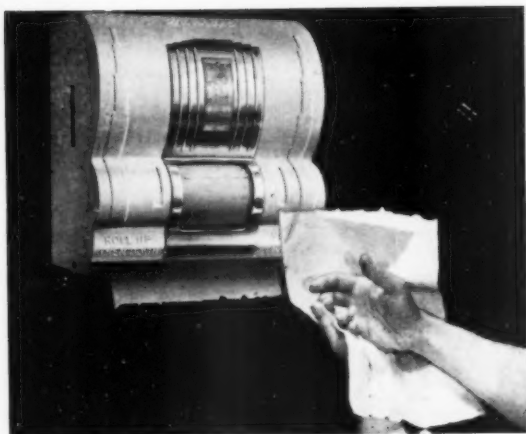


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Conversion Job Sets New Standard for Staff Canteens

By DAVID EARLY

An upper floor at their premises in Kingston was used to accommodate Benthalls' staff dining room. When it gave way to a fine new staff restaurant, the transformation was achieved without major structural alterations.

TYPICAL of a generous employment policy is the new staff cafeteria opened by Benthalls, Ltd., the Kingston-on-Thames department store. Conceived by Mr. Gerald C. Benthall, chairman and managing director of the company, the restaurant is a model of comfort and efficiency. Yet it remains an eminently practical proposition and an object lesson to those who say: "We can't modernize our canteen because we haven't got the room and we're not allowed to build."

The Benthalls' cafeteria was adapted and converted from a series of rooms at the top of the store, and it replaces the old and somewhat dingy staff dining-room which occupied approximately the same position—though not the same amount of space. Avoiding major alterations to the structure, floors and ceilings with different levels were turned into one big expanse measuring 850 square yards, not counting the kitchen.

Light and modern methods of construction were used, and the result is ample room for 580 people at one sitting, and many more when the premises are used for dances and other social functions. With its festive air and gay interior decoration, it is well named the "51 Restaurant."

The cafeteria floor is made of *Semtex* tiles, and the ceiling of *Celotex* acoustic tiles. *Semtex* tiles are quiet underfoot and easy to clean; *Celotex* tiles absorb and deaden sound—an important consideration where so much cutlery and crockery is in use.

Because of the low ceiling

(which was governed by the lowest of the old beams), all light fittings are recessed. The columns which support the ceiling are treated in a diagonal design, and this also helps to give an appearance of lightness. The tables have *Formica* tops, and the chairs are upholstered in a tartan design of nylon fabric. Heating is by standard hot-water radiators; ventilation comes naturally through the windows. Ventilation of the service counter and kitchen is by forced intake and extraction units of a standard design. (See picture.)

The kitchen equipment includes six roasting ovens, two double-deck baking ovens, two steaming ovens, a baker's oven, a four-pan fish fryer, grills, a large mixing machine, potato peeler and washing-up machines. Much of this equipment is heated or driven by electricity, but steam from the boiler-house is supplied to the service counter and hot cupboards, as well as the steaming ovens and washing-up machine.

Up to 40 meals a minute can be served from the 70-foot long main counter. This feature of the cafeteria is a showpiece in itself, for the decorative medium is an attractive shade of coloured glass. Pyramids of canned food lend colour to the scene, and serve as appetizers while the customers line up with their trays.

For practical purposes the counter is divided into sections for soup, fish, entrée, roast, vegetables, hot and cold sweets, ice-cream, tea and coffee. Light meals are served from the snack counter, which



Two sides of the story. Top: part of the 70ft. long main service counter. Above: the servery side of the kitchen, showing the air intake vents. These can be directed wherever fresh air is needed.



A general view of the kitchen, showing the vegetable boilers, steamers and stockpots. The main roasting ovens are in the background, underneath the second canopy.

concentrates on grills, ice-cream, and hot and cold drinks.

About 1,500 main meals and snacks are served every day. This means that about 90 per cent. of the staff make use of the cafeteria—a very high proportion. The obvious reasons for this are the quality, variety and cheapness of the food served. The menu always includes two soups, two kinds of fish, two entrées, various salads, and a choice of about five sweets. A complete meal can be obtained for 1s. 6d., and a very large one for about 2s.

The actual range of meals served is also wide. In addition to morning and evening snacks and main meals, breakfasts are available from 8 a.m., and on Fridays—when the store is open until 7 p.m.—tea is served from 4 p.m. to 5 p.m. Morning snacks, main meals and teas on Fridays are taken in shifts. Evening snacks are available any time from 5.30 p.m. to 6.30 p.m., 5.30 p.m. being the normal time for people to leave work.

Since the cafeteria opens early, shuts late, and serves snacks or main meals almost continuously throughout the day, the staff engaged on administration and pre-

paring, cooking and serving the meals is fairly large—in fact, it adds up to the somewhat formidable total of 46. This figure includes the manager, three chefs, five assistant cooks, a service staff of 13 (eight on the main counter, five on the snacks), four cashiers-cum-secretaries, ten general kitchen workers, two male cleaners, a storeman, a potman and six part-time cleaners.

Contact between the cafeteria staff and the customers is maintained by a management committee. This was brought together in the first instance by Bentalls' joint consultation committee, who appointed as chairman a representative of the management having a special responsibility for welfare.

In addition to the chairman and the cafeteria manager, the committee consists of representatives of the buyers, under-buyers and all sections of the store. It meets once a fortnight, deals with prices, menus, service problems, etc., and appoints stewards, who assist the smooth running of the cafeteria and deal with complaints. As might be expected in such a fine establishment, the latter are few and far between.

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—(Enquiry Ref. No. C.11/1.)

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—(Enquiry Ref. No. C.11/3.)

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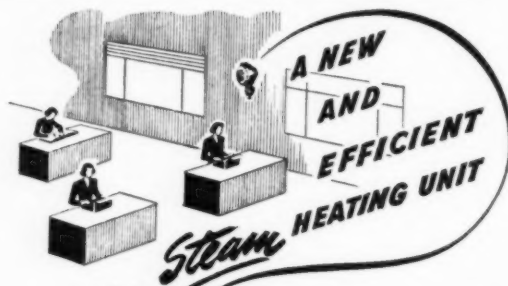
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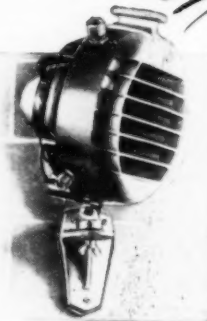
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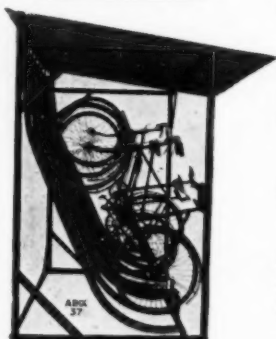
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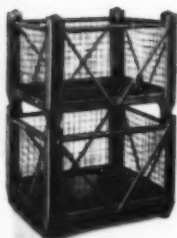
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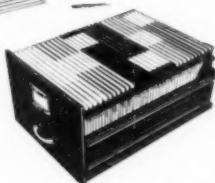


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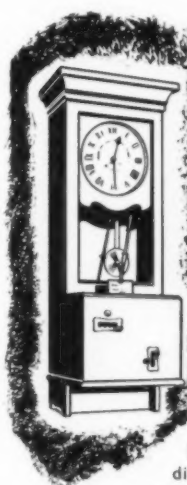
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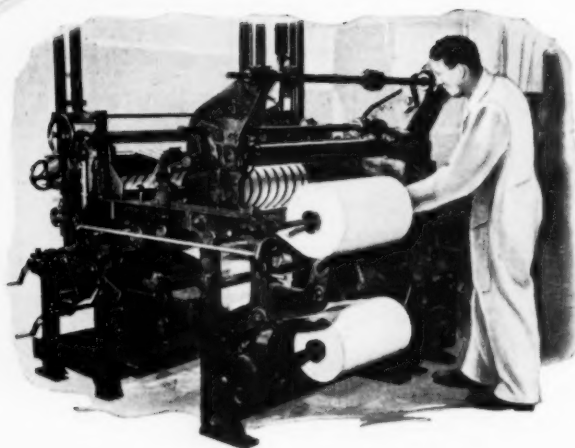
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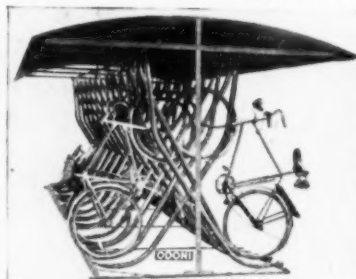
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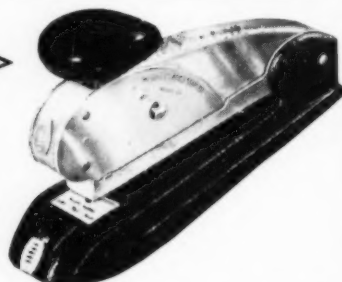
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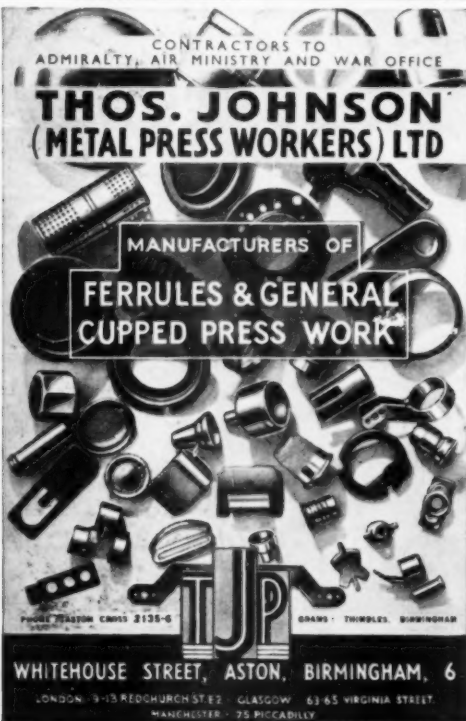
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—(Enquiry Ref. No. S.11/3.)

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This new ledger rack makes reference work easy.

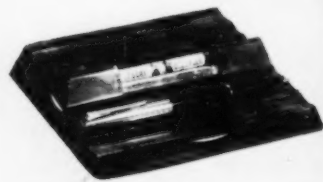
The ledger drops into the recess in the rack (see illustration), and a small metal fitting prevents the ledgers moving, once they are in position. These metal arms are L-shaped, one side being longer than the other. The longer side of the L holds the smaller ledger in both rack sizes; the shorter length holds the larger binder.

The racks are made of wood, stained and polished. Rubber feet are fitted to prevent sliding and scratching on a polished surface.

—(Enquiry Ref. No. S.11/2.)

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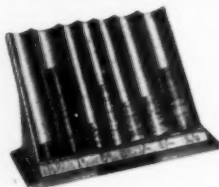
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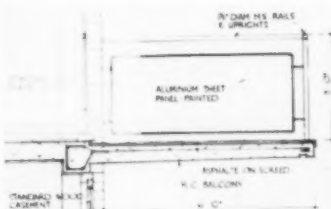
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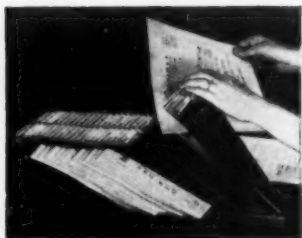
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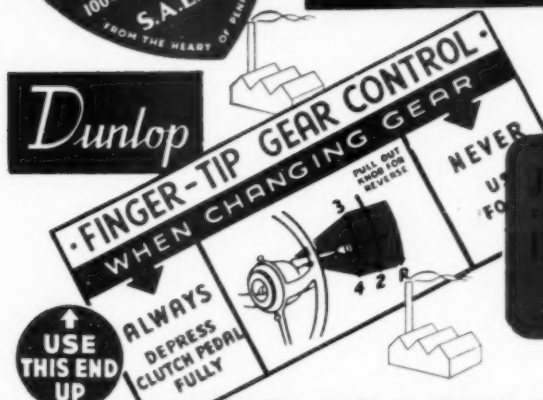
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